

Sequence Listing  
SEQUENCE LISTING

DT01 Rec'd PCT/PTC 24 JAN 2005

<110> Kogel, Karl-Heinz  
Huckelhoven, Ralph  
Trujillo, Marco

<120> Method for Obtaining a Pathogen Resistance in Plants

<130> 532622010500

<140> To be assigned

<141> 2005-01-24

<160> 24

<170> PatentIn Ver. 2.1

<210> 1

<211> 337

<212> DNA

<213> Hordeum vulgare

<220>

<221> CDS

<222> (2)..(337)

<223> coding for NADPH oxidase (fragment)

<400> 1

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  1           5           10           15
att gag atg cac aac tat ctc aca agt gtt tat gag gaa ggg gat gct 97
Ile Glu Met His Asn Tyr Leu Thr Ser Val Tyr Glu Glu Gly Asp Ala
          20           25           30
cgg tca gca ctc atc aca atg ctg caa gct ctc aac cat gcc aag aat 145
Arg Ser Ala Leu Ile Thr Met Leu Gln Ala Leu Asn His Ala Lys Asn
          35           40           45
ggt gtc gat gta gtg tct ggm act cga gtc cgg aca cat ttt gca aga 193
Gly Val Asp Val Val Ser Xaa Thr Arg Val Arg Thr His Phe Ala Arg
          50           55           60
cca aat ttt aag agg gtg ctg tct aag gta gcc gcc aaa cat cct tat 241
Pro Asn Phe Lys Arg Val Leu Ser Lys Val Ala Ala Lys His Pro Tyr
          65           70           75           80
gcc aag ata gga gtg ttc tat tgc gga gct cca gtt ctg gcg cag gaa 289
Ala Lys Ile Gly Val Phe Tyr Cys Gly Ala Pro Val Leu Ala Gln Glu
          85           90           95
cta agc aac ctt tgc cat gag ttc aat ggc aaa tgc acg aca aaa ttc 337
Leu Ser Asn Leu Cys His Glu Phe Asn Gly Lys Cys Thr Thr Lys Phe
          100           105           110

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<210> 2

<211> 112

<212> PRT

<213> Hordeum vulgare

<400> 2

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Phe Lys Gly Ile Met Asn Glu Ile Ala Glu Leu Asp Gln Arg Asn Ile
  1           5           10           15
Ile Glu Met His Asn Tyr Leu Thr Ser Val Tyr Glu Glu Gly Asp Ala
          20           25           30
Arg Ser Ala Leu Ile Thr Met Leu Gln Ala Leu Asn His Ala Lys Asn
          35           40           45
Gly Val Asp Val Val Ser Xaa Thr Arg Val Arg Thr His Phe Ala Arg
          50           55           60
Pro Asn Phe Lys Arg Val Leu Ser Lys Val Ala Ala Lys His Pro Tyr
          65           70           75           80
Ala Lys Ile Gly Val Phe Tyr Cys Gly Ala Pro Val Leu Ala Gln Glu
          85           90           95
Leu Ser Asn Leu Cys His Glu Phe Asn Gly Lys Cys Thr Thr Lys Phe
          100           105           110

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# Sequence Listing

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<210> 3
<211> 2832
<212> DNA
<213> Oryza sativa
<220>
<221> CDS
<222> (1)..(2829)
<223> coding for NADPH oxidase
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1 5 10 15
acg aca ccg cgg tcg ctg agc acg ggc tcg tcg ccg cgc ggg tcc gac 96
Thr Thr Pro Arg Ser Leu Ser Thr Gly Ser Ser Pro Arg Gly Ser Asp
20 25 30
gac cgg agc tcc gac gac ggg gag gag ctg gtc gag gtc acg ctc gac 144
Asp Arg Ser Ser Asp Asp Gly Glu Glu Leu Val Glu Val Thr Leu Asp
35 40 45
ctg cag gac gac gac acc att gtg ctt cgg agc gtc gag ccc gcg gcg 192
Leu Gln Asp Asp Asp Thr Ile Val Leu Arg Ser Val Glu Pro Ala Ala
50 55 60
gcg gcg gcg gcg ggg gtg ggg gcg ggg gcg ggg gcg gcg tcg gcg gcg 240
Ala Ala Ala Ala Gly Val Gly Ala Gly Ala Gly Ala Ala Ser Ala Arg
65 70 75 80
ggg gag ctc acg ggt ggc ccg tcg tcg tcg tcg tcg cgg tcg agg tcg 288
Gly Glu Leu Thr Gly Gly Pro Ser Ser Ser Ser Ser Arg Ser Arg Ser
85 90 95
ccg tcg atc cgg agg agc tcg tcg cac cgg ctg ctg cag ttc tcg cag 336
Pro Ser Ile Arg Arg Ser Ser Ser His Arg Leu Leu Gln Phe Ser Gln
100 105 110
gag ctc aag gcg gag gcc atg gcc cgg gcg cgg cag ttc tcg cag gac 384
Glu Leu Lys Ala Glu Ala Met Ala Arg Ala Arg Gln Phe Ser Gln Asp
115 120 125
ctg acc aag cgg ttc ggc cgc agc cac agc cgc agc gaa gcg cag gcg 432
Leu Thr Lys Arg Phe Gly Arg Ser His Ser Arg Ser Glu Ala Gln Ala
130 135 140
ccg tcg ggc ctc gag tcc gcg ctc gcc gcc cgc gcc gcg cgg cgg cag 480
Pro Ser Gly Leu Glu Ser Ala Leu Ala Ala Arg Ala Ala Arg Arg Gln
145 150 155 160
cgc gcg cag ctc gac cgc aca cgc tcc ggc gcc cac aag gcg ctc cgc 528
Arg Ala Gln Leu Asp Arg Thr Arg Ser Gly Ala His Lys Ala Leu Arg
165 170 175
ggc ctc cgc ttc atc agc agc aac aag gcc aac aac gcc tgg atg gag 576
Gly Leu Arg Phe Ile Ser Ser Asn Lys Ala Asn Asn Ala Trp Met Glu
180 185 190
gtg cag gcc aac ttc gac cgc ctc gcc cgc gac ggc tac ctc tcc cgc 624
Val Gln Ala Asn Phe Asp Arg Leu Ala Arg Asp Gly Tyr Leu Ser Arg
195 200 205
tcc gac ttc gcc gaa tgc atc ggg atg acg gaa tcg aag gag ttc gcg 672
Ser Asp Phe Ala Glu Cys Ile Gly Met Thr Glu Ser Lys Glu Phe Ala
210 215 220
ctc gag ctg ttc gac acg ctg agc cgg cga cga cag atg aag gtg gac 720
Leu Glu Leu Phe Asp Thr Leu Ser Arg Arg Arg Gln Met Lys Val Asp
225 230 235 240
acg att aac aag gat gaa ctc cgc gag atc tgg cag cag atc acc gat 768
Thr Ile Asn Lys Asp Glu Leu Arg Glu Ile Trp Gln Gln Ile Thr Asp
245 250 255
aac agc ttc gac tcc cgt ctc caa atc ttc gaa atg gtg gat aag 816
Asn Ser Phe Asp Ser Arg Leu Gln Ile Phe Phe Glu Met Val Asp Lys
260 265 270
aac gcg gac ggc cgg att acg gag gcg gag gtg aaa gag att att atg 864
Asn Ala Asp Gly Arg Ile Thr Glu Ala Glu Val Lys Glu Ile Ile Met
275 280 285

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# Sequence Listing

275	280	285	
ttg agc gcg tct gcc aat aaa ctg tcg agg ctt aag gag caa gca gaa 912			
Leu Ser Ala Ser Ala Asn Lys Leu Ser Arg Leu Lys Glu Gln Ala Glu			
290	295	300	
gag tac gcc gct ttg atc atg gag gag ctt gat cct gaa ggg ctc ggc 960			
Glu Tyr Ala Ala Leu Ile Met Glu Glu Leu Asp Pro Glu Gly Leu Gly			
305	310	315	320
tac att gag cta tgg caa ttg gag aca ctt ctg ttg cag aaa gat acc 1008			
Tyr Ile Glu Leu Trp Gln Leu Glu Thr Leu Leu Leu Gln Lys Asp Thr			
325	330	335	
tat atg aac tat agt cag gcc ctt agt tac aca agc caa gca ctg agc 1056			
Tyr Met Asn Tyr Ser Gln Ala Leu Ser Tyr Thr Ser Gln Ala Leu Ser			
340	345	350	
cag aat ctt gca ggg cta agg aag aag agt tca atc cgc aaa ata agc 1104			
Gln Asn Leu Ala Gly Leu Arg Lys Lys Ser Ser Ile Arg Lys Ile Ser			
355	360	365	
acc tct tta agc tac tat ttc gag gac aac tgg aaa cgt tta tgg gtg 1152			
Thr Ser Leu Ser Tyr Tyr Phe Glu Asp Asn Trp Lys Arg Leu Trp Val			
370	375	380	
ctt gca ttg tgg att ggg ata atg gct gga ctg ttc acc tgg aaa ttc 1200			
Leu Ala Leu Trp Ile Gly Ile Met Ala Gly Leu Phe Thr Trp Lys Phe			
385	390	395	400
atg cag tat cgt aac cga tat gtc ttt gat gtg atg ggc tac tgt gtc 1248			
Met Gln Tyr Arg Asn Arg Tyr Val Phe Asp Val Met Gly Tyr Cys Val			
405	410	415	
aca aca gca aaa gga gct gct gaa acc cta aag ctg aat atg gca att 1296			
Thr Thr Ala Lys Gly Ala Ala Glu Thr Leu Lys Leu Asn Met Ala Ile			
420	425	430	
atc ctc ctg cca gta tgc cgt aac acc att act tgg ttg cga agt aca 1344			
Ile Leu Leu Pro Val Cys Arg Asn Thr Ile Thr Trp Leu Arg Ser Thr			
435	440	445	
agg gct gca cgg gca cta cct ttt gat gac aac atc aac ttc cac aag 1392			
Arg Ala Ala Arg Ala Leu Pro Phe Asp Asp Asn Ile Asn Phe His Lys			
450	455	460	
act att gca gca gca att gtg ggt ata atc ctc cat gca ggg aac 1440			
Thr Ile Ala Ala Ala Ile Val Val Gly Ile Ile Leu His Ala Gly Asn			
465	470	475	480
cac ctt gta tgc gat ttt cca cgg tta ata aaa tca tca gat gag aag 1488			
His Leu Val Cys Asp Phe Pro Arg Leu Ile Lys Ser Ser Asp Glu Lys			
485	490	495	
tat gct cct ttg ggc cag tat ttt ggg gaa ata aag cca aca tat ttt 1536			
Tyr Ala Pro Leu Gly Gln Tyr Phe Gly Glu Ile Lys Pro Thr Tyr Phe			
500	505	510	
aca ttg gtc aaa gga gtg gag ggc atc act ggg gta atc atg gtt gta 1584			
Thr Leu Val Lys Gly Val Glu Gly Ile Thr Gly Val Ile Met Val Val			
515	520	525	
tgc atg ata att gct ttt act cta gca acc cgg tgg ttc cgc cgt agc 1632			
Cys Met Ile Ile Ala Phe Thr Leu Ala Thr Arg Trp Phe Arg Arg Ser			
530	535	540	
ttg gtt aag ctt cca agg cca ttt gac aaa ctg act ggc ttc aat gcc 1680			
Leu Val Lys Leu Pro Arg Pro Phe Asp Lys Leu Thr Gly Phe Asn Ala			
545	550	555	560
ttt tgg tat tct cat cat ctg ttc atc att gtg tat atc gcg ctc att 1728			
Phe Trp Tyr Ser His His Leu Phe Ile Ile Val Tyr Ile Ala Leu Ile			
565	570	575	
gtt cat gga gag tgt cta tac ctt att cat gtc tgg tac aga aga acg 1776			
Val His Gly Glu Cys Leu Tyr Leu Ile His Val Trp Tyr Arg Arg Thr			
580	585	590	
aca tgg atg tat ctt tca gtg cct gtt tgc ttg tat gta ggg gag agg 1824			
Thr Trp Met Tyr Leu Ser Val Pro Val Cys Leu Tyr Val Gly Glu Arg			
595	600	605	
att cta agg ttc ttc agg tct ggc agt tat tct gtc cgg cta ttg aag 1872			
Ile Leu Arg Phe Phe Arg Ser Gly Ser Tyr Ser Val Arg Leu Leu Lys			

# Sequence Listing

610	615	620	
gtg gcc ata tat cca ggt aat gtt ttg aca ctg caa atg tcc aag cct	Val Ala Ile Tyr Pro Gly Asn Val Leu Thr Leu Gln Met Ser Lys Pro		1920
625	630	635	640
ccc acg ttc cgt tac aag agt gga caa tat atg ttt gtt caa tgt cca	Pro Thr Phe Arg Tyr Lys Ser Gly Gln Tyr Met Phe Val Gln Cys Pro		1968
	645	650	655
gca gtg tct ccc ttt gaa tgg cat ccc ttc tca att act tca gca cct	Ala Val Ser Pro Phe Glu Trp His Pro Phe Ser Ile Thr Ser Ala Pro		2016
	660	665	670
ggg gat gac tac ctc agc att cat gtt cga caa ctt ggt gat tgg aca	Gly Asp Asp Tyr Leu Ser Ile His Val Arg Gln Leu Gly Asp Trp Thr		2064
	675	680	685
cga gaa ctc aag aga gta ttt gct gca gct tgt gag ccc cca gcg ggt	Arg Glu Leu Lys Arg Val Phe Ala Ala Cys Pro Pro Ala Gly		2112
	690	695	700
ggt aaa agc ggc ctt ctt agg gca gat gag aca act aag aaa atc tta	Gly Lys Ser Gly Leu Leu Arg Ala Asp Glu Thr Thr Lys Lys Ile Leu		2160
	705	710	715
ccc aag ctt ctg att gat gga ccg tat ggt tct cct gct cag gat tac	Pro Lys Leu Leu Ile Asp Gly Pro Tyr Gly Ser Pro Ala Gln Asp Tyr		2208
	725	730	735
agc aag tat gat gtt tta tta ctt gtt gga tta gga att ggt gcg aca	Ser Lys Tyr Asp Val Leu Leu Leu Val Gly Leu Gly Ile Gly Ala Thr		2256
	740	745	750
ccc ttt att agc ata tta aaa gat ctt ctg aat aac atc atc aaa atg	Pro Phe Ile Ser Ile Leu Lys Asp Leu Leu Asn Asn Ile Ile Lys Met		2304
	755	760	765
gag gaa gag gag gat gct tct act gat ctt tat cca cca atg ggt cgg	Glu Glu Glu Glu Asp Ala Ser Thr Asp Leu Tyr Pro Pro Met Gly Arg		2352
	770	775	780
aat aag cca cat gtt gat ctg ggc aca ctt atg acg att acc tca aga	Asn Lys Pro His Val Asp Leu Gly Thr Leu Met Thr Ile Thr Ser Arg		2400
	785	790	800
cca aag aag atc ttg aag acc aca aat gct tac ttt tac tgg gtg aca	Pro Lys Lys Ile Leu Lys Thr Thr Asn Ala Tyr Phe Tyr Trp Val Thr		2448
	805	810	815
cgt gag caa ggc tct ttt gat tgg ttc aaa gga gtc atg aat gaa att	Arg Glu Gln Gly Ser Phe Asp Trp Phe Lys Gly Val Met Asn Glu Ile		2496
	820	825	830
gct gac ttg gat caa agg aat atc att gag atg cac aac tac cta aca	Ala Asp Leu Asp Gln Arg Asn Ile Ile Glu Met His Asn Tyr Leu Thr		2544
	835	840	845
agc gtc tat gag gag ggg gat gcc agg tca gca ctc atc acc atg ctc	Ser Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala Leu Ile Thr Met Leu		2592
	850	855	860
caa gct ctg aac cat gcc aag aat gga gtt gat att gtc tct ggg aca	Gln Ala Leu Asn His Ala Lys Asn Gly Val Asp Ile Val Ser Gly Thr		2640
	865	870	875
aaa gtc cgg aca cat ttt gca cga cca aat tgg aga aag gtc ctt tct	Lys Val Arg Thr His Phe Ala Arg Pro Asn Trp Arg Lys Val Leu Ser		2688
	885	890	895
aaa att tcc tcc aag cat cca tat gcc aaa ata ggt gta ttc tac tgt	Lys Ile Ser Ser Lys His Pro Tyr Ala Lys Ile Gly Val Phe Tyr Cys		2736
	900	905	910
gga gct cca gtc ctg gca caa gaa cta agc aaa ctt tgc cat gaa ttc	Gly Ala Pro Val Leu Ala Gln Glu Leu Ser Lys Leu Cys His Glu Phe		2784
	915	920	925
aac ggg aaa tgc aca acg aag ttc gaa ttc cat aag gag cat ttc tga	Asn Gly Lys Cys Thr Thr Lys Phe Glu Phe His Lys Glu His Phe		2832
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<210> 4  
<211> 943

# Sequence Listing

<212> PRT

<213> Oryza sativa

<400> 4

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      20      25      30
Asp Arg Ser Ser Asp Asp Gly Glu Glu Leu Val Glu Val Thr Leu Asp
      35      40      45
Leu Gln Asp Asp Asp Thr Ile Val Leu Arg Ser Val Glu Pro Ala Ala
      50      55      60
Ala Ala Ala Ala Gly Val Gly Ala Gly Ala Gly Ala Ala Ser Ala Arg
      65      70      75      80
Gly Glu Leu Thr Gly Gly Pro Ser Ser Ser Ser Ser Arg Ser Arg Ser
      85      90      95
Pro Ser Ile Arg Arg Ser Ser Ser His Arg Leu Leu Gln Phe Ser Gln
      100      105      110
Glu Leu Lys Ala Glu Ala Met Ala Arg Ala Arg Gln Phe Ser Gln Asp
      115      120      125
Leu Thr Lys Arg Phe Gly Arg Ser His Ser Arg Ser Glu Ala Gln Ala
      130      135      140
Pro Ser Gly Leu Glu Ser Ala Leu Ala Ala Arg Ala Ala Arg Arg Gln
      145      150      155      160
Arg Ala Gln Leu Asp Arg Thr Arg Ser Gly Ala His Lys Ala Leu Arg
      165      170      175
Gly Leu Arg Phe Ile Ser Ser Asn Lys Ala Asn Asn Ala Trp Met Glu
      180      185      190
Val Gln Ala Asn Phe Asp Arg Leu Ala Arg Asp Gly Tyr Leu Ser Arg
      195      200      205
Ser Asp Phe Ala Glu Cys Ile Gly Met Thr Glu Ser Lys Glu Phe Ala
      210      215      220
Leu Glu Leu Phe Asp Thr Leu Ser Arg Arg Arg Gln Met Lys Val Asp
      225      230      235      240
Thr Ile Asn Lys Asp Glu Leu Arg Glu Ile Trp Gln Gln Ile Thr Asp
      245      250      255
Asn Ser Phe Asp Ser Arg Leu Gln Ile Phe Phe Glu Met Val Asp Lys
      260      265      270
Asn Ala Asp Gly Arg Ile Thr Glu Ala Glu Val Lys Glu Ile Ile Met
      275      280      285
Leu Ser Ala Ser Ala Asn Lys Leu Ser Arg Leu Lys Glu Gln Ala Glu
      290      295      300
Glu Tyr Ala Ala Leu Ile Met Glu Glu Leu Asp Pro Glu Gly Leu Gly
      305      310      315      320
Tyr Ile Glu Leu Trp Gln Leu Glu Thr Leu Leu Leu Gln Lys Asp Thr
      325      330      335
Tyr Met Asn Tyr Ser Gln Ala Leu Ser Tyr Thr Ser Gln Ala Leu Ser
      340      345      350
Gln Asn Leu Ala Gly Leu Arg Lys Lys Ser Ser Ile Arg Lys Ile Ser
      355      360      365
Thr Ser Leu Ser Tyr Tyr Phe Glu Asp Asn Trp Lys Arg Leu Trp Val
      370      375      380
Leu Ala Leu Trp Ile Gly Ile Met Ala Gly Leu Phe Thr Trp Lys Phe
      385      390      395      400
Met Gln Tyr Arg Asn Arg Tyr Val Phe Asp Val Met Gly Tyr Cys Val
      405      410      415
Thr Thr Ala Lys Gly Ala Ala Glu Thr Leu Lys Leu Asn Met Ala Ile
      420      425      430
Ile Leu Leu Pro Val Cys Arg Asn Thr Ile Thr Trp Leu Arg Ser Thr
      435      440      445
Arg Ala Ala Arg Ala Leu Pro Phe Asp Asp Asn Ile Asn Phe His Lys
      450      455      460
Thr Ile Ala Ala Ala Ile Val Val Gly Ile Ile Leu His Ala Gly Asn
      465      470      475      480

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# Sequence Listing

His	Leu	Val	Cys	Asp	Phe	Pro	Arg	Leu	Ile	Lys	Ser	Ser	Asp	Glu	Lys
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			500					505					510		
Thr	Leu	Val	Lys	Gly	Val	Glu	Gly	Ile	Thr	Gly	Val	Ile	Met	Val	Val
		515					520					525			
Cys	Met	Ile	Ile	Ala	Phe	Thr	Leu	Ala	Thr	Arg	Trp	Phe	Arg	Arg	Ser
	530					535					540				
Leu	Val	Lys	Leu	Pro	Arg	Pro	Phe	Asp	Lys	Leu	Thr	Gly	Phe	Asn	Ala
	545				550					555					560
Phe	Trp	Tyr	Ser	His	His	Leu	Phe	Ile	Ile	Val	Tyr	Ile	Ala	Leu	Ile
				565					570					575	
Val	His	Gly	Glu	Cys	Leu	Tyr	Leu	Ile	His	Val	Trp	Tyr	Arg	Arg	Thr
			580					585					590		
Thr	Trp	Met	Tyr	Leu	Ser	Val	Pro	Val	Cys	Leu	Tyr	Val	Gly	Glu	Arg
		595					600					605			
Ile	Leu	Arg	Phe	Phe	Arg	Ser	Gly	Ser	Tyr	Ser	Val	Arg	Leu	Leu	Lys
	610					615					620				
Val	Ala	Ile	Tyr	Pro	Gly	Asn	Val	Leu	Thr	Leu	Gln	Met	Ser	Lys	Pro
	625				630					635					640
Pro	Thr	Phe	Arg	Tyr	Lys	Ser	Gly	Gln	Tyr	Met	Phe	Val	Gln	Cys	Pro
				645					650					655	
Ala	Val	Ser	Pro	Phe	Glu	Trp	His	Pro	Phe	Ser	Ile	Thr	Ser	Ala	Pro
			660					665					670		
Gly	Asp	Asp	Tyr	Leu	Ser	Ile	His	Val	Arg	Gln	Leu	Gly	Asp	Trp	Thr
		675					680					685			
Arg	Glu	Leu	Lys	Arg	Val	Phe	Ala	Ala	Ala	Cys	Glu	Pro	Pro	Ala	Gly
	690					695					700				
Gly	Lys	Ser	Gly	Leu	Leu	Arg	Ala	Asp	Glu	Thr	Thr	Lys	Lys	Ile	Leu
	705				710					715					720
Pro	Lys	Leu	Leu	Ile	Asp	Gly	Pro	Tyr	Gly	Ser	Pro	Ala	Gln	Asp	Tyr
				725					730					735	
Ser	Lys	Tyr	Asp	Val	Leu	Leu	Leu	Val	Gly	Leu	Gly	Ile	Gly	Ala	Thr
			740					745					750		
Pro	Phe	Ile	Ser	Ile	Leu	Lys	Asp	Leu	Leu	Asn	Asn	Ile	Ile	Lys	Met
		755					760					765			
Glu	Glu	Glu	Glu	Asp	Ala	Ser	Thr	Asp	Leu	Tyr	Pro	Pro	Met	Gly	Arg
		770				775					780				
Asn	Lys	Pro	His	Val	Asp	Leu	Gly	Thr	Leu	Met	Thr	Ile	Thr	Ser	Arg
					790					795					800
Pro	Lys	Lys	Ile	Leu	Lys	Thr	Thr	Asn	Ala	Tyr	Phe	Tyr	Trp	Val	Thr
				805					810					815	
Arg	Glu	Gln	Gly	Ser	Phe	Asp	Trp	Phe	Lys	Gly	Val	Met	Asn	Glu	Ile
			820					825					830		
Ala	Asp	Leu	Asp	Gln	Arg	Asn	Ile	Ile	Glu	Met	His	Asn	Tyr	Leu	Thr
		835					840					845			
Ser	Val	Tyr	Glu	Glu	Gly	Asp	Ala	Arg	Ser	Ala	Leu	Ile	Thr	Met	Leu
		850				855					860				
Gln	Ala	Leu	Asn	His	Ala	Lys	Asn	Gly	Val	Asp	Ile	Val	Ser	Gly	Thr
					870					875					880
Lys	Val	Arg	Thr	His	Phe	Ala	Arg	Pro	Asn	Trp	Arg	Lys	Val	Leu	Ser
				885					890					895	
Lys	Ile	Ser	Ser	Lys	His	Pro	Tyr	Ala	Lys	Ile	Gly	Val	Phe	Tyr	Cys
			900					905					910		
Gly	Ala	Pro	Val	Leu	Ala	Gln	Glu	Leu	Ser	Lys	Leu	Cys	His	Glu	Phe
		915					920					925			
Asn	Gly	Lys	Cys	Thr	Thr	Lys	Phe	Glu	Phe	His	Lys	Glu	His	Phe	
	930					935					940				

<210> 5

<211> 2889

<212> DNA

<213> Nicotiana tabacum

# Sequence Listing

<220>

<221> CDS

<222> (1)..(2886)

<223> coding for NADPH oxidase

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Ser Ser Asp Lys Asp Phe Ser Gly Glu Leu Ser Pro Gly Ala Asp Ser	
20 25 30	
ggc tat aat tcc ggt ttt gct tcc gag gag ttt gtt gaa gtc acg ctt	144
Gly Tyr Asn Ser Gly Phe Ala Ser Glu Glu Phe Val Glu Val Thr Leu	
35 40 45	
gat ctt cag gat gat gat acc att att cta cgg agc gtt gaa ccg gct	192
Asp Leu Gln Asp Asp Asp Thr Ile Ile Leu Arg Ser Val Glu Pro Ala	
50 55 60	
act gtg att aac att gac gct cct gat ctt ccc gcc gga gtc ggt att	240
Thr Val Ile Asn Ile Asp Ala Pro Asp Leu Pro Ala Gly Val Gly Ile	
65 70 75 80	
tcc gga gtt tca att gaa act ccg acg tca gca tcg gtg tcg gaa tct	288
Ser Gly Val Ser Ile Glu Thr Pro Thr Ser Ala Ser Val Ser Glu Ser	
85 90 95	
cga tcg ccg acg atc cgc cgg agt tca tct agt aaa ctt cgt cag ttt	336
Arg Ser Pro Thr Ile Arg Arg Ser Ser Ser Ser Lys Leu Arg Gln Phe	
100 105 110	
tca cag gag ttg aaa gct gag gcg gtt gcg aaa gcg agg cag ttt tca	384
Ser Gln Glu Leu Lys Ala Glu Val Ala Lys Ala Arg Gln Phe Ser	
115 120 125	
caa gag ctg aag gcg gag tta agg aga ttc tca tgg agc cat ggg cat	432
Gln Glu Leu Lys Ala Glu Leu Arg Arg Phe Ser Trp Ser His Gly His	
130 135 140	
gcg tct cgc gcg ttt tcg ccc tcg tcg ttt ttt caa aac gcc gtc gtt	480
Ala Ser Arg Ala Phe Ser Pro Ser Ser Phe Gln Asn Ala Val Val	
145 150 155 160	
gga aca ggt aac ggc gtg gac tcg gct tta gcg gca cgt gca tta cgt	528
Gly Thr Gly Asn Gly Val Asp Ser Ala Leu Ala Ala Arg Ala Leu Arg	
165 170 175	
cgg caa cgc gcg cag ctt gat cgg act cgt tcc agc gcc cat aga gct	576
Arg Gln Arg Ala Gln Leu Asp Arg Thr Arg Ser Ser Ala His Arg Ala	
180 185 190	
ctt cgt aga ctc aaa ttc att agc aat aac aaa acc aat gga tgg aat	624
Leu Arg Arg Leu Lys Phe Ile Ser Asn Asn Lys Thr Asn Gly Trp Asn	
195 200 205	
gaa gtt gaa aac aat ttc tca aag ctc gct aaa gac ggt tat ctt tac	672
Glu Val Glu Asn Asn Phe Ser Lys Leu Ala Lys Asp Gly Tyr Leu Tyr	
210 215 220	
cgt tcc gat ttc gca caa tgc ata ggt atg aag gat tcg aag gaa ttt	720
Arg Ser Asp Phe Ala Gln Cys Ile Gly Met Lys Asp Ser Lys Glu Phe	
225 230 235 240	
gca ttg gaa tta ttt gat gct ttg agt aga aga aga aga tta aag gtt	768
Ala Leu Glu Leu Phe Asp Ala Leu Ser Arg Arg Arg Arg Leu Lys Val	
245 250 255	
gat aaa att agc aag gag gaa ttg tat gag tac tgg tct caa atc acc	816
Asp Lys Ile Ser Lys Glu Glu Leu Tyr Glu Tyr Trp Ser Gln Ile Thr	
260 265 270	
gat cag agt ttc gat tct cgg ctt cag atc tcc ttc gac atg gtg gac	864
Asp Gln Ser Phe Asp Ser Arg Leu Gln Ile Ser Phe Asp Met Val Asp	
275 280 285	
aag aat gaa gat ggt cga att gct gaa gag gaa gta aaa gag atc atc	912
Lys Asn Glu Asp Gly Arg Ile Ala Glu Glu Glu Val Lys Glu Ile Ile	
290 295 300	
atg cta agt gca tct gca aac aag tta tca aga tta aaa gaa caa gca	960

# Sequence Listing

Met	Leu	Ser	Ala	Ser	Ala	Asn	Lys	Leu	Ser	Arg	Leu	Lys	Glu	Gln	Ala		
305					310					315					320		
gag	gag	tat	gca	gct	tta	atc	atg	gaa	gaa	tta	gat	cct	gaa	aga	ctc	1008	
Glu	Glu	Tyr	Ala	Ala	Leu	Ile	Met	Glu	Glu	Leu	Asp	Pro	Glu	Arg	Leu		
				325					330					335			
ggc	tac	att	gag	cta	tgg	cag	ctg	gaa	aca	ctt	ctc	ctc	caa	aag	gac	1056	
Gly	Tyr	Ile	Glu	Leu	Trp	Gln	Leu	Glu	Thr	Leu	Leu	Leu	Gln	Lys	Asp		
			340					345					350				
act	tac	ctc	aac	tac	agt	caa	gca	cta	agt	tac	acg	agc	caa	gcc	ttg	1104	
Thr	Tyr	Leu	Asn	Tyr	Ser	Gln	Ala	Leu	Ser	Tyr	Thr	Ser	Gln	Ala	Leu		
		355					360					365					
agc	caa	aac	ctt	cac	gga	tta	agg	aag	aaa	agc	cca	ata	aaa	aga	atg	1152	
Ser	Gln	Asn	Leu	His	Gly	Leu	Arg	Lys	Lys	Ser	Pro	Ile	Lys	Arg	Met		
			370		375						380						
agc	aca	aaa	ctt	gtc	tat	tca	ttg	caa	gaa	aac	tgg	aag	aga	att	tgg	1200	
Ser	Thr	Lys	Leu	Val	Tyr	Ser	Leu	Gln	Glu	Asn	Trp	Lys	Arg	Ile	Trp		
385					390					395					400		
gtt	ctc	act	tta	tgg	att	ttg	ata	atg	att	ggg	ctt	ttt	ctt	tgg	aag	1248	
Val	Leu	Thr	Leu	Trp	Ile	Leu	Ile	Met	Ile	Gly	Leu	Phe	Leu	Trp	Lys		
			405					410					415				
ttc	tat	cag	tac	aaa	aac	aag	agt	gca	ttc	cgt	gtc	atg	ggt	tat	tgc	1296	
Phe	Tyr	Gln	Tyr	Lys	Asn	Lys	Ser	Ala	Phe	Arg	Val	Met	Gly	Tyr	Cys		
			420					425					430				
ctt	gtc	acg	gct	aag	ggc	gct	gct	gag	act	ctc	aag	ttc	aac	atg	gct	1344	
Leu	Val	Thr	Ala	Lys	Gly	Ala	Ala	Glu	Thr	Leu	Lys	Phe	Asn	Met	Ala		
			435			440						445					
ctt	ata	tta	ttg	cca	gta	tgc	aga	aac	act	att	aca	tgg	ctc	agg	tcc	1392	
Leu	Ile	Leu	Leu	Pro	Val	Cys	Arg	Asn	Thr	Ile	Thr	Trp	Leu	Arg	Ser		
			450			455					460						
acc	aag	ttg	agc	cat	ttt	gta	ccc	ttt	gac	gac	aac	atc	aac	ttt	cac	1440	
Thr	Lys	Leu	Ser	His	Phe	Val	Pro	Phe	Asp	Asp	Asn	Ile	Asn	Phe	His		
465					470				475					480			
aag	act	gtc	gct	gca	gcc	att	gtc	act	ggt	atc	ata	ctc	cat	gct	ggt	1488	
Lys	Thr	Val	Ala	Ala	Ala	Ile	Val	Thr	Gly	Ile	Ile	Leu	His	Ala	Gly		
			485					490					495				
aac	cat	ctt	gta	tgt	gat	ttc	cca	agg	ctt	ata	cat	gca	gat	gat	caa	1536	
Asn	His	Leu	Val	Cys	Asp	Phe	Pro	Arg	Leu	Ile	His	Ala	Asp	Asp	Gln		
			500					505				510					
gat	tat	caa	agt	ttt	ttg	tcg	aat	gat	ttt	ggc	caa	agt	aag	cct	gga	1584	
Asp	Tyr	Gln	Ser	Phe	Leu	Ser	Asn	Asp	Phe	Gly	Gln	Ser	Lys	Pro	Gly		
			515				520					525					
tac	ata	gac	ctt	gtt	aaa	gga	gtt	gag	ggt	gtg	acg	gga	ata	ata	atg	1632	
Tyr	Ile	Asp	Leu	Val	Lys	Gly	Val	Glu	Gly	Val	Thr	Gly	Ile	Ile	Met		
			530			535				540							
gta	atc	ctt	atg	gcc	att	gct	ttc	act	ctt	gct	aca	cga	tgg	ttt	aga	1680	
Val	Ile	Leu	Met	Ala	Ile	Ala	Phe	Thr	Leu	Ala	Thr	Arg	Trp	Phe	Arg		
545					550					555					560		
cgg	agc	ctc	att	aag	ttg	ccc	aaa	cct	ttt	gat	aga	ctc	act	ggc	ttc	1728	
Arg	Ser	Leu	Ile	Lys	Leu	Pro	Lys	Pro	Phe	Asp	Arg	Leu	Thr	Gly	Phe		
			565					570					575				
aat	gca	ttc	tgg	tat	tca	cac	cac	ctt	ctt	gtc	att	gtc	tac	atc	cta	1776	
Asn	Ala	Phe	Trp	Tyr	Ser	His	His	Leu	Leu	Val	Ile	Val	Tyr	Ile	Leu		
			580					585				590					
ctg	atc	atc	cat	ggc	acg	ttc	ctc	ttc	ctt	gtg	cat	aaa	tgg	tac	tcc	1824	
Leu	Ile	Ile	His	Gly	Thr	Phe	Leu	Phe	Leu	Val	His	Lys	Trp	Tyr	Ser		
			595			600					605						
aag	acg	acg	tgg	atg	tat	cta	gca	gtt	cct	gtg	ctt	ctc	tac	gca	ggg	1872	
Lys	Thr	Thr	Trp	Met	Tyr	Leu	Ala	Val	Pro	Val	Leu	Leu	Tyr	Ala	Gly		
			610			615				620							
gaa	aga	act	ctt	aga	ttc	ttc	cgg	tca	ggc	ttg	tac	act	gtc	cgg	ctt	1920	
Glu	Arg	Thr	Leu	Arg	Phe	Phe	Arg	Ser	Gly	Leu	Tyr	Thr	Val	Arg	Leu		
625					630				635						640		
ctg	aaa	gta	gca	ata	tat	cct	gga	aat	gtc	ctc	act	cta	caa	atg	tct	1968	



## Sequence Listing

Leu	Lys	Val	Ala	Ile	Tyr	Pro	Gly	Asn	Val	Leu	Thr	Leu	Gln	Met	Ser	
aag	cct	cct	caa	ttt	cga	tac	aaa	agt	gga	caa	tat	atg	ttt	gtc	cag	2016
Lys	Pro	Pro	Gln	Phe	Arg	Tyr	Lys	Ser	Gly	Gln	Tyr	Met	Phe	Val	Gln	
			660					665					670			
tgt	cca	gct	gtt	tct	cca	ttc	gag	tgg	cat	cca	ttt	tcc	att	act	tca	2064
Cys	Pro	Ala	Val	Ser	Pro	Phe	Glu	Trp	His	Pro	Phe	Ser	Ile	Thr	Ser	
		675					680					685				
gct	cct	ggg	gat	gac	tac	ttg	agc	att	cac	atc	cgg	caa	ctt	ggg	gac	2112
Ala	Pro	Gly	Asp	Asp	Tyr	Leu	Ser	Ile	His	Ile	Arg	Gln	Leu	Gly	Asp	
	690					695				700						
tgg	act	caa	gaa	ctc	aag	cgg	gtc	ttt	tct	gag	gct	tgc	gag	cgg	cca	2160
Trp	Thr	Gln	Glu	Leu	Lys	Arg	Val	Phe	Ser	Glu	Ala	Cys	Glu	Arg	Pro	
705					710					715					720	
gag	gct	gga	aag	agt	ggc	ctg	ctc	aga	gct	gac	gaa	aac	act	aag	aaa	2208
Glu	Ala	Gly	Lys	Ser	Gly	Leu	Leu	Arg	Ala	Asp	Glu	Asn	Thr	Lys	Lys	
				725					730					735		
agt	ttg	cca	aag	cta	tta	ata	gat	gga	cct	tac	gga	gct	cca	gca	caa	2256
Ser	Leu	Pro	Lys	Leu	Leu	Ile	Asp	Gly	Pro	Tyr	Gly	Ala	Pro	Ala	Gln	
			740					745					750			
gat	tac	cga	aaa	tat	gat	gtc	ttg	ctg	ctt	gtt	ggg	ctt	ggc	att	gga	2304
Asp	Tyr	Arg	Lys	Tyr	Asp	Val	Leu	Leu	Val	Gly	Leu	Gly	Gly	Ile	Gly	
		755					760					765				
gca	acg	ccg	ttc	ata	agt	atc	ctg	aaa	gac	ttg	ctc	gtt	aac	atc	gtg	2352
Ala	Thr	Pro	Phe	Ile	Ser	Ile	Leu	Lys	Asp	Leu	Leu	Val	Asn	Ile	Val	
	770					775				780						
aaa	atg	gag	gag	caa	gca	gat	tta	gcc	tca	gat	ttc	agt	ggg	aac	tca	2400
Lys	Met	Glu	Glu	Gln	Ala	Asp	Leu	Ala	Ser	Asp	Phe	Ser	Gly	Asn	Ser	
785					790					795					800	
gac	atg	agc	gtt	gcg	aca	agt	gaa	caa	cca	gct	ctc	aac	aag	att	tct	2448
Asp	Met	Ser	Val	Ala	Thr	Ser	Glu	Gln	Pro	Ala	Leu	Asn	Lys	Ile	Ser	
				805					810					815		
ctg	aaa	agg	aga	aag	agc	act	cta	aga	acc	aca	aat	gca	tat	ttt	tat	2496
Leu	Lys	Arg	Arg	Lys	Ser	Thr	Leu	Arg	Thr	Thr	Asn	Ala	Tyr	Phe	Tyr	
			820					825					830			
tgg	gtg	acc	cgg	gag	caa	gga	tca	ttt	gat	tgg	ttc	aaa	ggc	gtt	atg	2544
Trp	Val	Thr	Arg	Glu	Gln	Gly	Ser	Phe	Asp	Trp	Phe	Lys	Gly	Val	Met	
		835					840					845				
aac	gaa	gtg	gct	gaa	ctt	gat	caa	agg	ggg	gtc	atc	gag	atg	cat	aac	2592
Asn	Glu	Val	Ala	Glu	Leu	Asp	Gln	Arg	Gly	Val	Ile	Glu	Met	His	Asn	
	850					855					860					
tac	ttg	acg	agt	gtt	tat	gag	gaa	ggg	gat	gct	cgt	tca	gct	ctc	att	2640
Tyr	Leu	Thr	Ser	Val	Tyr	Glu	Glu	Gly	Asp	Ala	Arg	Ser	Ala	Leu	Ile	
865					870					875					880	
acc	atg	gtc	cag	gca	ctt	aac	cat	gct	aag	aat	ggg	gtt	gat	att	gta	2688
Thr	Met	Val	Gln	Ala	Leu	Asn	His	Ala	Lys	Asn	Gly	Val	Asp	Ile	Val	
				885					890					895		
tca	ggc	acc	agg	gtg	agg	aca	cat	ttt	gct	agg	cca	aat	tgg	aag	aaa	2736
Ser	Gly	Thr	Arg	Val	Arg	Thr	His	Phe	Ala	Arg	Pro	Asn	Trp	Lys	Lys	
			900					905					910			
gta	ttt	tcc	aag	acc	tta	acc	aag	cat	gca	aat	gca	aga	ata	ggg	gtt	2784
Val	Phe	Ser	Lys	Thr	Leu	Thr	Lys	His	Ala	Asn	Ala	Arg	Ile	Gly	Val	
		915					920					925				
ttc	tac	tgt	ggg	gca	ccc	gta	tta	gca	aaa	gaa	ctc	agc	aaa	ctc	tgc	2832
Phe	Tyr	Cys	Gly	Ala	Pro	Val	Leu	Ala	Lys	Glu	Leu	Ser	Lys	Leu	Cys	
		930				935					940					
aaa	gag	tat	aat	caa	aag	ggg	gca	aca	aag	ttc	gag	ttt	cac	aaa	gaa	2880
Lys	Glu	Tyr	Asn	Gln	Lys	Gly	Ala	Thr	Lys	Phe	Glu	Phe	His	Lys	Glu	
945					950					955					960	
cat	ttt	tag														2889
His	Phe															
<210>	6															
<211>	962															

# Sequence Listing

<212> PRT

<213> Nicotiana tabacum

<400> 6

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          20          25          30
Gly Tyr Asn Ser Gly Phe Ala Ser Glu Glu Phe Val Glu Val Thr Leu
          35          40          45
Asp Leu Gln Asp Asp Asp Thr Ile Ile Leu Arg Ser Val Glu Pro Ala
          50          55          60
Thr Val Ile Asn Ile Asp Ala Pro Asp Leu Pro Ala Gly Val Gly Ile
          65          70          75          80
Ser Gly Val Ser Ile Glu Thr Pro Thr Ser Ala Ser Val Ser Glu Ser
          85          90          95
Arg Ser Pro Thr Ile Arg Arg Ser Ser Ser Lys Leu Arg Gln Phe
          100          105          110
Ser Gln Glu Leu Lys Ala Glu Ala Val Ala Lys Ala Arg Gln Phe Ser
          115          120          125
Gln Glu Leu Lys Ala Glu Leu Arg Arg Phe Ser Trp Ser His Gly His
          130          135          140
Ala Ser Arg Ala Phe Ser Pro Ser Ser Phe Phe Gln Asn Ala Val Val
          145          150          155          160
Gly Thr Gly Asn Gly Val Asp Ser Ala Leu Ala Ala Arg Ala Leu Arg
          165          170          175
Arg Gln Arg Ala Gln Leu Asp Arg Thr Arg Ser Ser Ala His Arg Ala
          180          185          190
Leu Arg Arg Leu Lys Phe Ile Ser Asn Asn Lys Thr Asn Gly Trp Asn
          195          200          205
Glu Val Glu Asn Asn Phe Ser Lys Leu Ala Lys Asp Gly Tyr Leu Tyr
          210          215          220
Arg Ser Asp Phe Ala Gln Cys Ile Gly Met Lys Asp Ser Lys Glu Phe
          225          230          235          240
Ala Leu Glu Leu Phe Asp Ala Leu Ser Arg Arg Arg Arg Leu Lys Val
          245          250          255
Asp Lys Ile Ser Lys Glu Glu Leu Tyr Glu Tyr Trp Ser Gln Ile Thr
          260          265          270
Asp Gln Ser Phe Asp Ser Arg Leu Gln Ile Ser Phe Asp Met Val Asp
          275          280          285
Lys Asn Glu Asp Gly Arg Ile Ala Glu Glu Glu Val Lys Glu Ile Ile
          290          295          300
Met Leu Ser Ala Ser Ala Asn Lys Leu Ser Arg Leu Lys Glu Gln Ala
          305          310          315          320
Glu Glu Tyr Ala Ala Leu Ile Met Glu Glu Leu Asp Pro Glu Arg Leu
          325          330          335
Gly Tyr Ile Glu Leu Trp Gln Leu Glu Thr Leu Leu Leu Gln Lys Asp
          340          345          350
Thr Tyr Leu Asn Tyr Ser Gln Ala Leu Ser Tyr Thr Ser Gln Ala Leu
          355          360          365
Ser Gln Asn Leu His Gly Leu Arg Lys Lys Ser Pro Ile Lys Arg Met
          370          375          380
Ser Thr Lys Leu Val Tyr Ser Leu Gln Glu Asn Trp Lys Arg Ile Trp
          385          390          395          400
Val Leu Thr Leu Trp Ile Leu Ile Met Ile Gly Leu Phe Leu Trp Lys
          405          410          415
Phe Tyr Gln Tyr Lys Asn Lys Ser Ala Phe Arg Val Met Gly Tyr Cys
          420          425          430
Leu Val Thr Ala Lys Gly Ala Ala Glu Thr Leu Lys Phe Asn Met Ala
          435          440          445
Leu Ile Leu Leu Pro Val Cys Arg Asn Thr Ile Thr Trp Leu Arg Ser
          450          455          460
Thr Lys Leu Ser His Phe Val Pro Phe Asp Asp Asn Ile Asn Phe His
          465          470          475          480

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## Sequence Listing

Lys Thr Val Ala Ala Ala Ile Val Thr Gly Ile Ile Leu His Ala Gly  
 485 490 495  
 Asn His Leu Val Cys Asp Phe Pro Arg Leu Ile His Ala Asp Asp Gln  
 500 505 510  
 Asp Tyr Gln Ser Phe Leu Ser Asn Asp Phe Gly Gln Ser Lys Pro Gly  
 515 520 525  
 Tyr Ile Asp Leu Val Lys Gly Val Glu Gly Val Thr Gly Ile Ile Met  
 530 535 540  
 Val Ile Leu Met Ala Ile Ala Phe Thr Leu Ala Thr Arg Trp Phe Arg  
 545 550 555 560  
 Arg Ser Leu Ile Lys Leu Pro Lys Pro Phe Asp Arg Leu Thr Gly Phe  
 565 570 575  
 Asn Ala Phe Trp Tyr Ser His His Leu Leu Val Ile Val Tyr Ile Leu  
 580 585 590  
 Leu Ile Ile His Gly Thr Phe Leu Phe Leu Val His Lys Trp Tyr Ser  
 595 600 605  
 Lys Thr Thr Trp Met Tyr Leu Ala Val Pro Val Leu Leu Tyr Ala Gly  
 610 615 620  
 Glu Arg Thr Leu Arg Phe Phe Arg Ser Gly Leu Tyr Thr Val Arg Leu  
 625 630 635 640  
 Leu Lys Val Ala Ile Tyr Pro Gly Asn Val Leu Thr Leu Gln Met Ser  
 645 650 655  
 Lys Pro Pro Gln Phe Arg Tyr Lys Ser Gly Gln Tyr Met Phe Val Gln  
 660 665 670  
 Cys Pro Ala Val Ser Pro Phe Glu Trp His Pro Phe Ser Ile Thr Ser  
 675 680 685  
 Ala Pro Gly Asp Asp Tyr Leu Ser Ile His Ile Arg Gln Leu Gly Asp  
 690 695 700  
 Trp Thr Gln Glu Leu Lys Arg Val Phe Ser Glu Ala Cys Glu Arg Pro  
 705 710 715 720  
 Glu Ala Gly Lys Ser Gly Leu Leu Arg Ala Asp Glu Asn Thr Lys Lys  
 725 730 735  
 Ser Leu Pro Lys Leu Leu Ile Asp Gly Pro Tyr Gly Ala Pro Ala Gln  
 740 745 750  
 Asp Tyr Arg Lys Tyr Asp Val Leu Leu Leu Val Gly Leu Gly Ile Gly  
 755 760 765  
 Ala Thr Pro Phe Ile Ser Ile Leu Lys Asp Leu Leu Val Asn Ile Val  
 770 775 780  
 Lys Met Glu Glu Gln Ala Asp Leu Ala Ser Asp Phe Ser Gly Asn Ser  
 785 790 795 800  
 Asp Met Ser Val Ala Thr Ser Glu Gln Pro Ala Leu Asn Lys Ile Ser  
 805 810 815  
 Leu Lys Arg Arg Lys Ser Thr Leu Arg Thr Thr Asn Ala Tyr Phe Tyr  
 820 825 830  
 Trp Val Thr Arg Glu Gln Gly Ser Phe Asp Trp Phe Lys Gly Val Met  
 835 840 845  
 Asn Glu Val Ala Glu Leu Asp Gln Arg Gly Val Ile Glu Met His Asn  
 850 855 860  
 Tyr Leu Thr Ser Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala Leu Ile  
 865 870 875 880  
 Thr Met Val Gln Ala Leu Asn His Ala Lys Asn Gly Val Asp Ile Val  
 885 890 895  
 Ser Gly Thr Arg Val Arg Thr His Phe Ala Arg Pro Asn Trp Lys Lys  
 900 905 910  
 Val Phe Ser Lys Thr Leu Thr Lys His Ala Asn Ala Arg Ile Gly Val  
 915 920 925  
 Phe Tyr Cys Gly Ala Pro Val Leu Ala Lys Glu Leu Ser Lys Leu Cys  
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 Lys Glu Tyr Asn Gln Lys Gly Ala Thr Lys Phe Glu Phe His Lys Glu  
 945 950 955 960  
 His Phe

# Sequence Listing

<210> 7  
 <211> 3733  
 <212> DNA  
 <213> Solanum tuberosum  
 <220>  
 <221> CDS  
 <222> (92)..(2980)  
 <223> coding for NADPH oxidase  
 <400> 7

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tatttatitta ttgtgctttg atttgggaca a atg agg ggt tta cct ggg cat 112
                               1       5
                               Met Arg Gly Leu Pro Gly His

gaa cgc cgg tgg acg tcg gat acg gta tct tcc ggc aag gat tta agt 160
Glu Arg Arg Trp Thr Ser Asp Thr Val Ser Ser Gly Lys Asp Leu Ser
                               10       15       20

ggt gag tca tcg ccg gga act gat tcc ggg aat att tcc ggt ttt gct 208
Gly Glu Ser Ser Pro Gly Thr Asp Ser Gly Asn Ile Ser Gly Phe Ala
                               25       30       35

tcc gag gag ttt gtt gaa gtt ata ctt gat ctt cag gat gat gat acg 256
Ser Glu Glu Phe Val Glu Val Ile Leu Asp Leu Gln Asp Asp Asp Thr
                               40       45       50       55

att att cta cgg agc gtt gaa ccg gct act gta atc aac att gat gct 304
Ile Ile Leu Arg Ser Val Glu Pro Ala Thr Val Ile Asn Ile Asp Ala
                               60       65       70

tct gat cct gct acc gga gtc ggt att ggt gga gta tcg att gaa act 352
Ser Asp Pro Ala Thr Gly Val Gly Ile Gly Gly Val Ser Ile Glu Thr
                               75       80       85

ccg gcg tcg ctg act tcg acg tcg gga act cga tcg ccg acg atg cgt 400
Pro Ala Ser Leu Thr Ser Thr Ser Gly Thr Arg Ser Pro Thr Met Arg
                               90       95       100

cgg agt aca tcg aat aaa tta cgt cag ttt tca cag gag ttg aaa gct 448
Arg Ser Thr Ser Asn Lys Leu Arg Gln Phe Ser Gln Glu Leu Lys Ala
                               105       110       115

gag gct gtc gcg aaa gcg aag cat ttc tcg caa gag ctt aaa gcg gag 496
Glu Ala Val Ala Lys Ala Lys His Phe Ser Gln Glu Leu Lys Ala Glu
                               120       125       130       135

cta agg aga ttc tca tgg agc cat gga cat gcg tct cgc act ttt tcg 544
Leu Arg Arg Phe Ser Trp Ser His Gly His Ala Ser Arg Thr Phe Ser
                               140       145       150

ccg gcg tcg ttt ttc caa aac gcc gtc gtc ggt aca ggc aac ggt gta 592
Pro Ala Ser Phe Phe Gln Asn Ala Val Val Gly Thr Gly Asn Gly Val
                               155       160       165

gat tcg gct tta gca gct cga gca tta cga cgg cag cgc gct cag ctc 640
Asp Ser Ala Leu Ala Ala Arg Ala Leu Arg Arg Gln Arg Ala Gln Leu
                               170       175       180

gat cgg act cgt tcc agc gct cac aag gct ctt cgt gga ctc aaa ttc 688
Asp Arg Thr Arg Ser Ser Ala His Lys Ala Leu Arg Gly Leu Lys Phe
                               185       190       195

atc agc aat aac aaa act aac gga tgg aat gaa gtt gaa aac aat ttt 736
Ile Ser Asn Asn Lys Thr Asn Gly Trp Asn Glu Val Glu Asn Asn Phe
                               200       205       210       215

gct aag ctc gct aaa gac ggt tac ctt tat cgc tcc gat ttc gca caa 784
Ala Lys Leu Ala Lys Asp Gly Tyr Leu Tyr Arg Ser Asp Phe Ala Gln
                               220       225       230

tgc atc ggt atg aag gat tca aag gaa ttt gca ttg gaa ttg ttt gat 832
Cys Ile Gly Met Lys Asp Ser Lys Glu Phe Ala Leu Glu Leu Phe Asp
                               235       240       245

gct ttg agt aga aga aga aga ttg aag gtt gat aag att agc aaa gag 880
Ala Leu Ser Arg Arg Arg Arg Leu Lys Val Asp Lys Ile Ser Lys Glu
                               250       255       260

gaa ttg tat gag tat tgg tct caa atc acc gat cag agt ttc gat tct 928
Glu Leu Tyr Glu Tyr Trp Ser Gln Ile Thr Asp Gln Ser Phe Asp Ser

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# Sequence Listing

265	270	275	976
cgg ctt cag atc ttc ttc gac atg gtg gac aag aat gaa gat ggt cga	Arg Leu Gln Ile Phe Phe Asp Met Val Asp Lys Asn Glu Asp Gly Arg		
280	285	290	1024
att ggt gaa gaa gaa gta aaa gag atc atc atg cta agt gcc tct gca	Ile Gly Glu Glu Glu Val Lys Glu Ile Ile Met Leu Ser Ala Ser Ala		
300	305	310	1072
aac aaa tta tca aga tta aaa gaa caa gca gag gag tat gca gct ctg	Asn Lys Leu Ser Arg Leu Lys Glu Gln Ala Glu Glu Tyr Ala Ala Leu		
315	320	325	1120
atc atg gaa gaa tta gat cct gaa aga ctt ggc tac att gag cta tgg	Ile Met Glu Glu Leu Asp Pro Glu Arg Leu Gly Tyr Ile Glu Leu Trp		
330	335	340	1168
cag ctg gaa acg ctt ctc ctc caa aag gac act tac ctc aac tac agt	Gln Leu Glu Thr Leu Leu Leu Gln Lys Asp Thr Tyr Leu Asn Tyr Ser		
345	350	355	1216
caa gca cta agc tac aca agc caa gct ttg agc caa aac ctg caa ggg	Gln Ala Leu Ser Tyr Thr Ser Gln Ala Leu Ser Gln Asn Leu Gln Gly		
360	365	370	1264
ttg agg aag aga agc cca ata aga aga atg agc aca aaa ctt gtc tat	Leu Arg Lys Arg Ser Pro Ile Arg Arg Met Ser Thr Lys Leu Val Tyr		
380	385	390	1312
tca ctg caa gag aat tgg aag aga att tgg gtt ctg gtc ttg tgg att	Ser Leu Gln Glu Asn Trp Lys Arg Ile Trp Val Leu Val Leu Trp Ile		
395	400	405	1360
ttg ata atg att gga ctt ttt ctt tgg aag ttc tat ctg tac aaa cag	Leu Ile Met Ile Gly Leu Phe Leu Trp Lys Phe Tyr Leu Tyr Lys Gln		
410	415	420	1408
aaa agt gca ttt caa gtt atg ggt tat tgc ctt cta aca gct aag ggt	Lys Ser Ala Phe Gln Val Met Gly Tyr Cys Leu Leu Thr Ala Lys Gly		
425	430	435	1456
gct gct gag act cta aag ttc aac atg gct ttg ata ttg ttg cca gtt	Ala Ala Glu Thr Leu Lys Phe Asn Met Ala Leu Ile Leu Leu Pro Val		
440	445	450	1504
tgc agg aac acc att aca ttc ctc agg tct act aaa ttg agt tgt ttt	Cys Arg Asn Thr Ile Thr Phe Leu Arg Ser Thr Lys Leu Ser Cys Phe		
460	465	470	1552
gta ccc ttt gat gac aac atc aac ttc cac aag act gtt gct gca gcc	Val Pro Phe Asp Asp Asn Ile Asn Phe His Lys Thr Val Ala Ala Ala		
475	480	485	1600
att gtt act ggt atc ata ctc cat gcc ggt aat cat ctt gta tgt gat	Ile Val Thr Gly Ile Ile Leu His Ala Gly Asn His Leu Val Cys Asp		
490	495	500	1648
ttc cca aag ctt ata cat gca aat aat acg aat tat cag aaa tat ttg	Phe Pro Lys Leu Ile His Ala Asn Asn Thr Asn Tyr Gln Lys Tyr Leu		
505	510	515	1696
gtg aat gat ttt ggc cca agc cag cct cag tac ata gat ctt gtt aaa	Val Asn Asp Phe Gly Pro Ser Gln Pro Gln Tyr Ile Asp Leu Val Lys		
520	525	530	1744
gga gtg gag ggt gtg aca gga ata ata atg gta atc ctc atg gcc att	Gly Val Glu Gly Val Thr Gly Ile Ile Met Val Ile Leu Met Ala Ile		
540	545	550	1792
gct ttc act ctt gca acg cga tgg ttt agg cgg agc ctc att aag ttt	Ala Phe Thr Leu Ala Thr Arg Trp Phe Arg Arg Ser Leu Ile Lys Phe		
555	560	565	1840
ccc aaa cct ttt gat aga ctc act ggt ttc aat gcg ttc tgg tac tcg	Pro Lys Pro Phe Asp Arg Leu Thr Gly Phe Asn Ala Phe Trp Tyr Ser		
570	575	580	1888
cac cac ctt ctc atc att gtc tac atc gta ctg atc atc cat ggc aca	His His Leu Leu Ile Ile Val Tyr Ile Val Leu Ile Ile His Gly Thr		
585	590	595	1936
ttc ctc tac ctt gtg cat aac tgg tac tcc aaa acg aca tgg atg tat	Phe Leu Tyr Leu Val His Asn Trp Tyr Ser Lys Thr Trp Met Tyr		

## Sequence Listing

600	cta	gca	gtt	cct	gta	605	ctt	ctc	tac	gca	610	gaa	aga	act	ctt	aga	615	ttc	1984
Leu	Ala	Val	Pro	Val	620	Leu	Leu	Tyr		Ala	Gly	Glu	Arg	Thr	Leu	Arg	Phe		
ttc	cga	tca	ggc	tta	tat	aca	gtc	cgg	ctt	cta	aaa	gta	gca	ata	tat			2032	
Phe	Arg	Ser	Gly	Leu	Tyr	Thr	Val	Arg	Leu	Leu	Lys	Val	Ala	Ile	Tyr				
cct	gga	aat	gtc	ctt	act	ctg	caa	atg	tct	aag	cct	ccg	caa	ttt	cga			2080	
Pro	Gly	Asn	Val	Leu	Thr	Leu	Gln	Met	Ser	Lys	Pro	Pro	Gln	Phe	Arg				
tac	aag	agt	gga	caa	tat	atg	ttt	gtc	cag	tgt	cca	gct	ggt	tct	cca			2128	
Tyr	Lys	Ser	Gly	Gln	Tyr	Met	Phe	Val	Gln	Cys	Pro	Ala	Val	Ser	Pro				
ttc	gag	tgg	cat	cca	ttt	tcc	att	act	tca	gct	cct	ggg	gat	gac	tac			2176	
Phe	Glu	Trp	His	Pro	Phe	Ser	Ile	Thr	Ser	Ala	Pro	Gly	Asp	Asp	Tyr				
ttg	agc	att	cat	atc	cga	caa	ctt	ggt	gac	tgg	act	caa	gaa	ctc	aag			2224	
Leu	Ser	Ile	His	Ile	Arg	Gln	Leu	Gly	Asp	Trp	Thr	Gln	Glu	Leu	Lys				
cgg	gtg	ttt	tcc	gag	gct	tgc	gag	cag	cca	gag	gct	gga	aag	agt	ggc			2272	
Arg	Val	Phe	Ser	Glu	Ala	Cys	Glu	Gln	Pro	Glu	Ala	Gly	Lys	Ser	Gly				
ctg	ctc	aga	gct	gac	gaa	aac	acc	aaa	aca	agt	ttg	cca	aag	cta	ttg			2320	
Leu	Leu	Arg	Ala	Asp	Glu	Asn	Thr	Lys	Thr	Ser	Leu	Pro	Lys	Leu	Leu				
ata	gat	gga	cct	tat	gga	gct	cca	gca	caa	gat	tac	cga	aag	tat	gat			2368	
Ile	Asp	Gly	Pro	Tyr	Gly	Ala	Pro	Ala	Gln	Asp	Tyr	Arg	Lys	Tyr	Asp				
gtc	tta	ctg	ctt	gtt	ggt	ctt	ggc	att	gga	gca	act	ccc	ttt	ata	agt			2416	
Val	Leu	Leu	Leu	Val	Gly	Leu	Gly	Ile	Gly	Ala	Thr	Pro	Phe	Ile	Ser				
atc	ctg	aaa	gac	ttg	ctc	aaa	aac	atc	gtc	aca	atg	gag	gag	caa	gca			2464	
Ile	Leu	Lys	Asp	Leu	Leu	Lys	Asn	Ile	Val	Thr	Met	Glu	Glu	Gln	Ala				
gat	tta	gtc	tcg	gat	ttt	tca	ggg	aac	tca	gac	atg	agc	gct	gca	aca			2512	
Asp	Leu	Val	Ser	Asp	Phe	Ser	Gly	Asn	Ser	Asp	Met	Ser	Ala	Ala	Thr				
agt	gaa	caa	cca	gct	ctc	aac	aag	att	tct	cca	aaa	aag	aga	aag	agt			2560	
Ser	Glu	Gln	Pro	Ala	Leu	Asn	Lys	Ile	Ser	Pro	Lys	Lys	Arg	Lys	Ser				
act	cta	aaa	acc	aca	aat	gca	tat	ttt	tat	tgg	gtg	acc	cgg	gag	caa			2608	
Thr	Leu	Lys	Thr	Thr	Asn	Ala	Tyr	Phe	Tyr	Trp	Val	Thr	Arg	Glu	Gln				
gga	tca	ttt	gat	tgg	ttc	aaa	ggt	gtt	atg	aac	gaa	gtg	gct	gaa	ctt			2656	
Gly	Ser	Phe	Asp	Trp	Phe	Lys	Gly	Val	Met	Asn	Glu	Val	Ala	Glu	Leu				
gat	caa	agg	ggg	gtc	atc	gag	atg	cat	aac	tac	tta	acg	agt	gtt	tat			2704	
Asp	Gln	Arg	Gly	Val	Ile	Glu	Met	His	Asn	Tyr	Leu	Thr	Ser	Val	Tyr				
gag	gaa	ggg	gat	gca	cgt	tca	gct	ctc	att	acc	atg	gtc	cag	gcg	ctt			2752	
Glu	Glu	Gly	Asp	Ala	Arg	Ser	Ala	Leu	Ile	Thr	Met	Val	Gln	Ala	Leu				
aac	cat	gct	aag	aat	ggg	gtt	gat	att	gta	tca	ggc	acc	agt	gtg	agg			2800	
Asn	His	Ala	Lys	Asn	Gly	Val	Asp	Ile	Val	Ser	Gly	Thr	Ser	Val	Arg				
aca	cat	ttt	gcc	aga	ccg	aat	tgg	agg	aaa	gta	ttt	tcc	aag	acc	tta			2848	
Thr	His	Phe	Ala	Arg	Pro	Asn	Trp	Arg	Lys	Val	Phe	Ser	Lys	Thr	Leu				
acc	aag	cat	gca	aat	gca	aga	ata	gga	gtt	ttc	tac	tgc	ggt	gca	ccc			2896	
Thr	Lys	His	Ala	Asn	Ala	Arg	Ile	Gly	Val	Phe	Tyr	Cys	Gly	Ala	Pro				
ata	tta	gct	aaa	gaa	ctc	agc	aaa	ctc	tgc	aaa	gag	ttt	aac	caa	aag			2944	
Ile	Leu	Ala	Lys	Glu	Leu	Ser	Lys	Leu	Cys	Lys	Glu	Phe	Asn	Gln	Lys				

## Sequence Listing

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          940          945          950          2990
ggc aca acg aag ttc gag ttt cac aaa gaa cat ttt tagaaggccc
Gly Thr Thr Lys Phe Glu Phe His Lys Glu His Phe
          955          960
tggagtacaa ttaatcttgc atcaacggta cacacatcgg taaaccagta tttaccacat 3050
ctatcttttg tacctgattt gatgattcta ctgaagacat aacattagta aggaataagt 3110
cagagacaaa ttgtacataa taggaggaag cacatttaca gagaaaatac ataccaatat 3170
gatatgtgta taggttttgt atattcagtc atctgttata acataccaaa cttcagaact 3230
ccaaaaggga gactctgctt tggctgatg gcttagaata tgggagggaa aaaaagacga 3290
caattgaatg gtcacgatac acatgaagaa tgagaatatt gggaaacagc taataagaag 3350
ttgaccttct tgataaagaa acactatgaa aatggcaagc atgaaaggac agacaatcat 3410
ggcttggatg gggaaaacaa aatacaattt tgaaagaaga agataatatt agtaggagta 3470
gtgggggact gatagctttg ttgggtggaac ttataatggg gctaaggga tctttccaaa 3530
aaatgtctat gtagtaacta ctttttcttt tgctttgtga gtattttttg ggggtatttta 3590
atatactact tattagataa gaggatagaa aatacgtgta tatgcaattc ttattagtaa 3650
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gaaaaaaaaa aaaaaaaaaa aaa 3733

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&lt;210&gt; 8

&lt;211&gt; 963

&lt;212&gt; PRT

&lt;213&gt; Solanum tuberosum

&lt;400&gt; 8

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Met Arg Gly Leu Pro Gly His Glu Arg Arg Trp Thr Ser Asp Thr Val
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Ser Ser Gly Lys Asp Leu Ser Gly Glu Ser Ser Pro Gly Thr Asp Ser
          20          25          30
Gly Asn Ile Ser Gly Phe Ala Ser Glu Glu Phe Val Glu Val Ile Leu
          35          40          45
Asp Leu Gln Asp Asp Asp Thr Ile Ile Leu Arg Ser Val Glu Pro Ala
          50          55          60
Thr Val Ile Asn Ile Asp Ala Ser Asp Pro Ala Thr Gly Val Gly Ile
          65          70          75          80
Gly Gly Val Ser Ile Glu Thr Pro Ala Ser Leu Thr Ser Thr Ser Gly
          85          90          95
Thr Arg Ser Pro Thr Met Arg Arg Ser Thr Ser Asn Lys Leu Arg Gln
          100          105          110
Phe Ser Gln Glu Leu Lys Ala Glu Ala Val Ala Lys Ala Lys His Phe
          115          120          125
Ser Gln Glu Leu Lys Ala Glu Leu Arg Arg Phe Ser Trp Ser His Gly
          130          135          140
His Ala Ser Arg Thr Phe Ser Pro Ala Ser Phe Phe Gln Asn Ala Val
          145          150          155          160
Val Gly Thr Gly Asn Gly Val Asp Ser Ala Leu Ala Ala Arg Ala Leu
          165          170          175
Arg Arg Gln Arg Ala Gln Leu Asp Arg Thr Arg Ser Ser Ala His Lys
          180          185          190
Ala Leu Arg Gly Leu Lys Phe Ile Ser Asn Asn Lys Thr Asn Gly Trp
          195          200          205
Asn Glu Val Glu Asn Asn Phe Ala Lys Leu Ala Lys Asp Gly Tyr Leu
          210          215          220
Tyr Arg Ser Asp Phe Ala Gln Cys Ile Gly Met Lys Asp Ser Lys Glu
          225          230          235          240
Phe Ala Leu Glu Leu Phe Asp Ala Leu Ser Arg Arg Arg Arg Leu Lys
          245          250          255
Val Asp Lys Ile Ser Lys Glu Glu Leu Tyr Glu Tyr Trp Ser Gln Ile
          260          265          270
Thr Asp Gln Ser Phe Asp Ser Arg Leu Gln Ile Phe Phe Asp Met Val
          275          280          285
Asp Lys Asn Glu Asp Gly Arg Ile Gly Glu Glu Glu Val Lys Glu Ile
          290          295          300
Ile Met Leu Ser Ala Ser Ala Asn Lys Leu Ser Arg Leu Lys Glu Gln
          305          310          315          320
Ala Glu Glu Tyr Ala Ala Leu Ile Met Glu Glu Leu Asp Pro Glu Arg

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# Sequence Listing

Leu	Gly	Tyr	Ile	325	Leu	Trp	Gln	Leu	330	Glu	Thr	Leu	Leu	335	Leu	Gln	Lys	
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Leu	Ser	Gln	Asn	355	Leu	Gln	Gly	Leu	360	Arg	Lys	Arg	Ser	Pro	365	Ile	Arg	Arg
Met	Ser	Thr	Lys	370	Leu	Val	Tyr	Ser	375	Leu	Gln	Glu	Asn	Trp	380	Lys	Arg	Ile
385	Trp	Val	Leu	Val	Leu	Trp	Ile	Leu	390	Ile	Met	Ile	Gly	Leu	395	Phe	Leu	Trp
Lys	Phe	Tyr	Leu	405	Tyr	Lys	Gln	Lys	410	Ser	Ala	Phe	Gln	Val	415	Met	Gly	Tyr
Cys	Leu	Leu	Thr	420	Ala	Lys	Gly	Ala	425	Ala	Glu	Thr	Leu	Lys	430	Phe	Asn	Met
Ala	Leu	Ile	Leu	435	Leu	Pro	Val	Cys	440	Arg	Asn	Thr	Ile	Thr	445	Phe	Leu	Arg
Ser	Thr	Lys	Leu	450	Ser	Cys	Phe	Val	455	Pro	Phe	Asp	Asp	Asn	460	Ile	Asn	Phe
465	His	Lys	Thr	Val	470	Ala	Ala	Ile	475	Val	Thr	Gly	Ile	Ile	480	Leu	His	Ala
Gly	Asn	His	Leu	485	Val	Cys	Asp	Phe	490	Lys	Leu	Ile	His	Ala	495	Asn	Asn	Asn
Thr	Asn	Tyr	Gln	500	Lys	Tyr	Leu	Val	505	Asn	Asp	Phe	Gly	Pro	510	Ser	Gln	Pro
Gln	Tyr	Ile	Asp	515	Leu	Val	Lys	Gly	520	Val	Glu	Gly	Val	Thr	525	Gly	Ile	Ile
Met	Val	Ile	Leu	530	Met	Ala	Ile	Ala	535	Phe	Thr	Leu	Ala	Thr	540	Arg	Trp	Phe
545	Arg	Arg	Ser	Leu	550	Ile	Lys	Phe	555	Pro	Lys	Pro	Phe	Asp	560	Arg	Leu	Thr
Phe	Asn	Ala	Phe	565	Trp	Tyr	Ser	His	570	Leu	Leu	Ile	Ile	Val	575	Tyr	Ile	Ile
Val	Leu	Ile	His	580	Gly	Thr	Phe	Leu	585	Tyr	Leu	Val	His	590	Asn	Trp	Tyr	Tyr
Ser	Lys	Thr	Thr	595	Trp	Met	Tyr	Leu	600	Ala	Val	Pro	Val	605	Leu	Leu	Tyr	Ala
Gly	Glu	Arg	Thr	610	Leu	Arg	Phe	Phe	615	Arg	Ser	Gly	Leu	620	Tyr	Thr	Val	Arg
625	Leu	Leu	Lys	Val	630	Ile	Tyr	Pro	635	Asn	Val	Leu	Thr	640	Leu	Gln	Met	Met
Ser	Lys	Pro	Pro	645	Gln	Phe	Arg	Tyr	650	Lys	Ser	Gly	Gln	655	Tyr	Met	Phe	Val
Gln	Cys	Pro	Ala	660	Val	Ser	Pro	Phe	665	Glu	Trp	His	Pro	670	Ser	Ile	Thr	Thr
Ser	Ala	Pro	Gly	675	Asp	Asp	Tyr	Leu	680	Ser	Ile	His	Ile	685	Arg	Gln	Leu	Gly
Asp	Trp	Thr	Gln	690	Glu	Leu	Lys	Arg	695	Val	Phe	Ser	Glu	700	Ala	Cys	Glu	Gln
705	Pro	Glu	Ala	Gly	710	Ser	Gly	Leu	715	Arg	Ala	Asp	Glu	720	Asn	Thr	Lys	Lys
Thr	Ser	Leu	Pro	725	Lys	Leu	Leu	Ile	730	Asp	Gly	Pro	Tyr	735	Gly	Ala	Pro	Ala
Gln	Asp	Tyr	Arg	740	Lys	Tyr	Asp	Val	745	Leu	Leu	Leu	Val	750	Gly	Leu	Gly	Ile
Gly	Ala	Thr	Pro	755	Phe	Ile	Ser	Ile	760	Leu	Lys	Asp	Leu	765	Leu	Lys	Asn	Ile
Val	Thr	Met	Glu	770	Glu	Gln	Ala	Asp	775	Leu	Val	Ser	Asp	780	Phe	Ser	Gly	Asn
785	Ser	Asp	Met	Ser	790	Ala	Ala	Thr	795	Glu	Gln	Pro	Ala	800	Leu	Asn	Lys	Ile
Ser	Pro	Lys	Lys	805	Arg	Lys	Ser	Thr	810	Leu	Lys	Thr	Thr	815	Asn	Ala	Tyr	Phe
			820						825					830				



# Sequence Listing

Tyr Trp Val Thr Arg Glu Gln Gly Ser Phe Asp Trp Phe Lys Gly Val  
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Met Asn Glu Val Ala Glu Leu Asp Gln Arg Gly Val Ile Glu Met His  
850 855 860  
Asn Tyr Leu Thr Ser Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala Leu  
865 870 875 880  
Ile Thr Met Val Gln Ala Leu Asn His Ala Lys Asn Gly Val Asp Ile  
885 890 895  
Val Ser Gly Thr Ser Val Arg Thr His Phe Ala Arg Pro Asn Trp Arg  
900 905 910  
Lys Val Phe Ser Lys Thr Leu Thr Lys His Ala Asn Ala Arg Ile Gly  
915 920 925  
Val Phe Tyr Cys Gly Ala Pro Ile Leu Ala Lys Glu Leu Ser Lys Leu  
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945 950 955 960  
Glu His Phe

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<212> DNA  
<213> Lycopersicon esculentum  
<220>  
<221> CDS  
<222> (146)..(3112)  
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tttattgtca tttgatttgg gacag atg agg ggt tta cct ggg cat gaa cgc 172  
Met Arg Gly Leu Pro Gly His Glu Arg  
1 5  
cgg tgg acg tcg gat acg gtg tct tcc ggg aag gat tta agt ggt gag 220  
Arg Trp Thr Ser Asp Thr Val Ser Ser Gly Lys Asp Leu Ser Gly Glu  
10 15 20 25  
tca tcg ccg gga act gat tcc ggg aat att tcc ggt ttt gct tcg gag 268  
Ser Ser Pro Gly Thr Asp Ser Gly Asn Ile Ser Gly Phe Ala Ser Glu  
30 35 40  
gag ttt gtt gaa gtt ata ctt gat ctt cag gat gat gat acg att att 316  
Glu Phe Val Glu Val Ile Leu Asp Leu Gln Asp Asp Asp Thr Ile Ile  
45 50 55  
tta cgg agc gtt gaa ccg gct act gta atc aac att gat ggt tct gat 364  
Leu Arg Ser Val Glu Pro Ala Thr Val Ile Asn Ile Asp Gly Ser Asp  
60 65 70  
cct gct tcc gga gtc ggt att ggt gga gca tcg att gaa act ccg gcg 412  
Pro Ala Ser Gly Val Gly Ile Gly Gly Ala Ser Ile Glu Thr Pro Ala  
75 80 85  
tcg gtg acg tcg acg tcg gaa act cga tcg ccg atg atg cgt ccg agt 460  
Ser Val Thr Ser Thr Ser Glu Thr Arg Ser Pro Met Met Arg Arg Ser  
90 95 100 105  
aca tct aat aag ttt cgt cag ttt tca cag gag ttg aaa gct gag gct 508  
Thr Ser Asn Lys Phe Arg Gln Phe Ser Gln Glu Leu Lys Ala Glu Ala  
110 115 120  
gtt gcg aaa gcg aag cat ttc tcg caa gag ctt aaa gcg gag cta agg 556  
Val Ala Lys Ala Lys His Phe Ser Gln Glu Leu Lys Ala Glu Leu Arg  
125 130 135  
aga ttc tca tgg agc cat gga cat gcg tct cgt gct ttt tcg ccg gcg 604  
Arg Phe Ser Trp Ser His Gly His Ala Ser Arg Ala Phe Ser Pro Ala  
140 145 150  
tcg ttt ttc caa aac gct gtc gtc gga aca ggc aac ggt gta gac tcg 652  
Ser Phe Phe Gln Asn Ala Val Val Gly Thr Gly Asn Gly Val Asp Ser  
155 160 165

# Sequence Listing

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act cgt tcc agc gca cac aag gct ctt cgt gga ctc aaa ttc atc agc	748
Thr Arg Ser Ser Ala His Lys Ala Leu Arg Gly Leu Lys Phe Ile Ser	
190 195 200	
aat aac aaa act aac gga tgg aat gaa gtt gaa aac aat ttc gct aag	796
Asn Asn Lys Thr Asn Gly Trp Asn Glu Val Glu Asn Asn Phe Ala Lys	
205 210 215	
ctc gct aaa gac ggt tac ctt tat cgt tcc gat ttc gca caa tgc atc	844
Leu Ala Lys Asp Gly Tyr Leu Tyr Arg Ser Asp Phe Ala Gln Cys Ile	
220 225 230	
ggt cag tac tca cgc cgg cga tca cta cag ttt aat tat aga tta att	892
Gly Gln Tyr Ser Arg Arg Arg Ser Leu Gln Phe Asn Tyr Arg Leu Ile	
235 240 245	
aca tta att ttg att aat tat ttg gtt aaa ggt atg aag gat tca aag	940
Thr Leu Ile Leu Ile Asn Tyr Leu Val Lys Gly Met Lys Asp Ser Lys	
250 255 260 265	
gaa ttt gcg ttg gaa ttg ttt gat gct tta agt aga aga aga aga ttg	988
Glu Phe Ala Leu Glu Leu Phe Asp Ala Leu Ser Arg Arg Arg Arg Leu	
270 275 280	
aag gtt gat aag att agc caa gag gaa ttg tat gag tat tgg tct caa	1036
Lys Val Asp Lys Ile Ser Gln Glu Glu Leu Tyr Glu Tyr Trp Ser Gln	
285 290 295	
atc acc gat cag agt ttc gat tct cgg ctt cag atc ttc ttc gac atg	1084
Ile Thr Asp Gln Ser Phe Asp Ser Arg Leu Gln Ile Phe Phe Asp Met	
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Val Asp Lys Asn Glu Asp Gly Arg Ile Gly Glu Glu Glu Val Lys Glu	
315 320 325	
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Ile Ile Met Leu Ser Ala Ser Ala Asn Lys Leu Ser Arg Leu Lys Glu	
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Gln Ala Glu Glu Tyr Ala Ala Leu Ile Met Glu Glu Leu Asp Pro Glu	
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aga ctt ggc tac att gag cta tgg cag ctg gaa aca ctt ctc ctc caa	1276
Arg Leu Gly Tyr Ile Glu Leu Trp Gln Leu Glu Thr Leu Leu Leu Gln	
365 370 375	
aag gac act tac ctc aac tac agt caa gca cta agc tac aca agc caa	1324
Lys Asp Thr Tyr Leu Asn Tyr Ser Gln Ala Leu Ser Tyr Thr Ser Gln	
380 385 390	
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Ala Leu Ser Gln Asn Leu Gln Gly Leu Arg Lys Arg Ser Pro Ile Arg	
395 400 405	
aga atg agc aca aaa ctt gtc tat tca ctg caa gag aat tgg aag aga	1420
Arg Met Ser Thr Lys Leu Val Tyr Ser Leu Gln Glu Asn Trp Lys Arg	
410 415 420 425	
att tgg gtt ctg gtc ttg tgg att ttg ata atg att gga ctt ttt ctt	1468
Ile Trp Val Leu Val Leu Trp Ile Leu Ile Met Ile Gly Leu Phe Leu	
430 435 440	
tgg aag ttc tat cag tac aaa cag aaa agt gca ttt caa gtc atg ggt	1516
Trp Lys Phe Tyr Gln Tyr Lys Gln Lys Ser Ala Phe Gln Val Met Gly	
445 450 455	
tat tgc ctt cta aca gct aag ggt gct gct gag act ctc aag ttc aac	1564
Tyr Cys Leu Leu Thr Ala Lys Gly Ala Ala Glu Thr Leu Lys Phe Asn	
460 465 470	
atg gct tta ata ttg ttg cca gta tgc agg aac acc att aca ttc ctc	1612
Met Ala Leu Ile Leu Leu Pro Val Cys Arg Asn Thr Ile Thr Phe Leu	
475 480 485	
agg tct act aaa ttg agc tgt ttt gta ccc ttt gat gac aac ata aac	1660
Arg Ser Thr Lys Leu Ser Cys Phe Val Pro Phe Asp Asp Asn Ile Asn	
490 495 500 505	

## Sequence Listing

ttt	cac	aag	act	gtt	gct	gca	gcc	att	gtc	act	ggg	atc	ata	ctc	cat	1708
Phe	His	Lys	Thr	Val	Ala	Ala	Ala	Ile	Val	Thr	Gly	Ile	Ile	Leu	His	
				510					515					520		
gcc	ggg	aat	cac	ctt	gta	tgt	gat	ttc	cca	aag	ctt	ata	cat	gca	aat	1756
Ala	Gly	Asn	His	Leu	Val	Cys	Asp	Phe	Pro	Lys	Leu	Ile	His	Ala	Asn	
			525					530					535			
agt	acg	aat	tat	cag	aaa	tat	ttg	gtg	aat	gat	ttt	ggc	cca	agc	cag	1804
Ser	Thr	Asn	Tyr	Gln	Lys	Tyr	Leu	Val	Asn	Asp	Phe	Gly	Pro	Ser	Gln	
			540				545					550				
cct	cag	tac	ata	gat	ctt	gtt	aaa	gga	gtg	gag	ggg	gtg	act	gga	ata	1852
Pro	Gln	Tyr	Ile	Asp	Leu	Val	Lys	Gly	Val	Glu	Gly	Val	Thr	Gly	Ile	
			555			560					565					
gtt	atg	gta	atc	ctc	atg	gcc	att	gct	ttc	act	ctt	gca	acg	cga	tgg	1900
Val	Met	Val	Ile	Leu	Met	Ala	Ile	Ala	Phe	Thr	Leu	Ala	Thr	Arg	Trp	
				570		575				580					585	
ttt	agg	cgg	agc	ctc	att	aag	tta	ccc	aaa	cct	ttt	gat	aga	ctc	act	1948
Phe	Arg	Arg	Ser	Leu	Ile	Lys	Leu	Pro	Lys	Pro	Phe	Asp	Arg	Leu	Thr	
				590					595					600		
ggg	ttc	aat	gcg	ttc	tgg	tac	tcg	cac	cac	ctt	ctc	atc	att	gtc	tac	1996
Gly	Phe	Asn	Ala	Phe	Trp	Tyr	Ser	His	His	Leu	Leu	Ile	Ile	Val	Tyr	
			605					610					615			
atc	gta	ctg	atc	atc	cat	ggc	aca	ttc	ctc	tac	ctt	gtg	cat	aac	tgg	2044
Ile	Val	Leu	Ile	Ile	His	Gly	Thr	Phe	Leu	Tyr	Leu	Val	His	Asn	Trp	
			620			625						630				
tac	tcc	aaa	acg	aca	tgg	atg	tat	ata	gca	gtt	cct	gta	ctt	ctt	tac	2092
Tyr	Ser	Lys	Thr	Thr	Trp	Met	Tyr	Ile	Ala	Val	Pro	Val	Leu	Leu	Tyr	
						640					645					
gca	ggg	gaa	aga	act	ctt	aga	ttc	ttc	cga	tca	ggc	tta	tac	agt	gtc	2140
Ala	Gly	Glu	Arg	Thr	Leu	Arg	Phe	Phe	Arg	Ser	Gly	Leu	Tyr	Ser	Val	
					650	655			660						665	
cgg	ctt	cta	aaa	gta	gca	ata	tat	cct	gga	aat	gtc	ctt	act	ctg	caa	2188
Arg	Leu	Leu	Lys	Val	Ala	Ile	Tyr	Pro	Gly	Asn	Val	Leu	Thr	Leu	Gln	
				670					675					680		
atg	tct	aag	cct	ccg	caa	ttt	cga	tac	aag	agt	gga	cag	tat	atg	ttt	2236
Met	Ser	Lys	Pro	Pro	Gln	Phe	Arg	Tyr	Lys	Ser	Gly	Gln	Tyr	Met	Phe	
				685				690					695			
gtc	cag	tgt	cca	gct	gtt	tct	cca	ttc	gag	tgg	cat	cca	ttt	tcc	att	2284
Val	Gln	Cys	Pro	Ala	Val	Ser	Pro	Phe	Glu	Trp	His	Pro	Phe	Ser	Ile	
			700				705					710				
act	tca	gct	cct	ggg	gat	gac	ttg	agc	att	cat	atc	cga	caa	ctt		2332
Thr	Ser	Ala	Pro	Gly	Asp	Asp	Tyr	Leu	Ser	Ile	His	Ile	Arg	Gln	Leu	
				715		720				725						
ggg	gac	tgg	act	caa	gaa	ctc	aag	cga	gtg	ttt	tcc	gag	gct	tgc	gag	2380
Gly	Asp	Trp	Thr	Gln	Glu	Leu	Lys	Arg	Val	Phe	Ser	Glu	Ala	Cys	Glu	
				730	735				740					745		
cag	cca	gag	gct	gga	aag	agt	ggc	ctg	ctc	aga	gct	gac	gaa	aac	acc	2428
Gln	Pro	Glu	Ala	Gly	Lys	Ser	Gly	Leu	Leu	Arg	Ala	Asp	Glu	Asn	Thr	
				750				755						760		
aaa	aca	agt	ttg	cca	aag	cta	tta	ata	gat	gga	cct	tat	gga	gct	cca	2476
Lys	Thr	Ser	Leu	Pro	Lys	Leu	Leu	Ile	Asp	Gly	Pro	Tyr	Gly	Ala	Pro	
			765					770					775			
gca	caa	gat	tac	cgg	aag	tat	gat	gtc	tta	ctg	ctt	gtt	ggg	ctt	ggc	2524
Ala	Gln	Asp	Tyr	Arg	Lys	Tyr	Asp	Val	Leu	Leu	Leu	Val	Gly	Leu	Gly	
			780				785					790				
att	gga	gca	act	ccc	ttt	ata	agt	atc	ctg	aaa	gac	ttg	ctc	aaa	aac	2572
Ile	Gly	Ala	Thr	Pro	Phe	Ile	Ser	Ile	Leu	Lys	Asp	Leu	Leu	Lys	Asn	
						800					805					
atc	gtc	gca	atg	gag	gag	caa	gca	gat	tta	gtc	tcg	gat	ttc	agt	gga	2620
Ile	Val	Ala	Met	Glu	Glu	Gln	Ala	Asp	Leu	Val	Ser	Asp	Phe	Ser	Gly	
				810	815					820					825	
aac	tcg	gac	atg	agt	gct	gca	aca	agt	gaa	caa	cca	gct	ctc	aac	aag	2668
Asn	Ser	Asp	Met	Ser	Ala	Ala	Thr	Ser	Glu	Gln	Pro	Ala	Leu	Asn	Lys	
				830					835					840		

# Sequence Listing

att tct cca aaa aag aga aag agt act cta aaa acc aca aat gca tat 2716  
Ile Ser Pro Lys Lys Arg Lys Ser Thr Leu Lys Thr Thr Asn Ala Tyr  
845 850 855

ttt tat tgg gtg acc cgg gag caa gga tca ttt gat tgg ttc aaa ggt 2764  
Phe Tyr Trp Val Thr Arg Glu Gln Gly Ser Phe Asp Trp Phe Lys Gly  
860 865 870

gtt atg aat gaa gtg gct gaa ctt gat caa agg ggt gtc atc gag atg 2812  
Val Met Asn Glu Val Ala Glu Leu Asp Gln Arg Gly Val Ile Glu Met  
875 880 885

cat aac tac ttg acg agt gtt tat gag gaa ggg gat gca cgt tca gct 2860  
His Asn Tyr Leu Thr Ser Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala  
890 895 900 905

ctc att acc atg gtc cag gca ctt aac cat gct aag aat ggg gtt gat 2908  
Leu Ile Thr Met Val Gln Ala Leu Asn His Ala Lys Asn Gly Val Asp  
910 915 920

att gta tca ggc acc agt gtg agg aca cat ttc gcc agg ccg aat tgg 2956  
Ile Val Ser Gly Thr Ser Val Arg Thr His Phe Ala Arg Pro Asn Trp  
925 930 935

agg aaa gta ttt tcc aag acc tta acc aag cat gca aat gca aga ata 3004  
Arg Lys Val Phe Ser Lys Thr Leu Thr Lys His Ala Asn Ala Arg Ile  
940 945 950

gga gtt ttc tac tgt ggt gca ccc ata tta gct aaa gaa ctc agc caa 3052  
Gly Val Phe Tyr Cys Gly Ala Pro Ile Leu Ala Lys Glu Leu Ser Gln  
955 960 965

ctc tgc aaa gag ttt aac caa aag ggc aca aca aag ttc gag ttt cac 3100  
Leu Cys Lys Glu Phe Asn Gln Lys Gly Thr Thr Lys Phe Glu Phe His  
970 975 980 985

aaa gaa cat ttt tagaagggcc tggagtatga ttaatcttgc atcaacggta 3152  
Lys Glu His Phe

cacacatcta tcttcggtac cttatttgat tattctactg aagagataac attagtaagg 3212  
aataagtcag agataaattg tacataatag ggaagaagac tatttcaaga gaaaatacat 3272  
accaataaga tgtgaaaaaa aaaaaaaaaa aaaaactcgt gccg 3316

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<213> Lycopersicon esculentum  
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Ser Ser Gly Lys Asp Leu Ser Gly Glu Ser Ser Pro Gly Thr Asp Ser  
20 25 30  
Gly Asn Ile Ser Gly Phe Ala Ser Glu Glu Phe Val Glu Val Ile Leu  
35 40 45  
Asp Leu Gln Asp Asp Asp Thr Ile Ile Leu Arg Ser Val Glu Pro Ala  
50 55 60  
Thr Val Ile Asn Ile Asp Gly Ser Asp Pro Ala Ser Gly Val Gly Ile  
65 70 75 80  
Gly Gly Ala Ser Ile Glu Thr Pro Ala Ser Val Thr Ser Thr Ser Glu  
85 90 95  
Thr Arg Ser Pro Met Met Arg Arg Ser Thr Ser Asn Lys Phe Arg Gln  
100 105 110  
Phe Ser Gln Glu Leu Lys Ala Glu Ala Val Ala Lys Ala Lys His Phe  
115 120 125  
Ser Gln Glu Leu Lys Ala Glu Leu Arg Arg Phe Ser Trp Ser His Gly  
130 135 140  
His Ala Ser Arg Ala Phe Ser Pro Ala Ser Phe Phe Gln Asn Ala Val  
145 150 155 160  
Val Gly Thr Gly Asn Gly Val Asp Ser Ala Leu Ala Ala Arg Ala Leu  
165 170 175  
Arg Arg Gln Arg Ala Gln Leu Asp Arg Thr Arg Ser Ser Ala His Lys  
180 185 190  
Ala Leu Arg Gly Leu Lys Phe Ile Ser Asn Asn Lys Thr Asn Gly Trp  
195 200 205

# Sequence Listing

Asn	Glu	Val	Glu	Asn	Asn	Phe	Ala	Lys	Leu	Ala	Lys	Asp	Gly	Tyr	Leu
210						215					220				
Tyr	Arg	Ser	Asp	Phe	Ala	Gln	Cys	Ile	Gly	Gln	Tyr	Ser	Arg	Arg	Arg
225					230					235					240
Ser	Leu	Gln	Phe	Asn	Tyr	Arg	Leu	Ile	Thr	Leu	Ile	Leu	Ile	Asn	Tyr
				245						250				255	
Leu	Val	Lys	Gly	Met	Lys	Asp	Ser	Lys	Glu	Phe	Ala	Leu	Glu	Leu	Phe
			260					265					270		
Asp	Ala	Leu	Ser	Arg	Arg	Arg	Arg	Leu	Lys	Val	Asp	Lys	Ile	Ser	Gln
		275					280					285			
Glu	Glu	Leu	Tyr	Glu	Tyr	Trp	Ser	Gln	Ile	Thr	Asp	Gln	Ser	Phe	Asp
	290					295					300				
Ser	Arg	Leu	Gln	Ile	Phe	Phe	Asp	Met	Val	Asp	Lys	Asn	Glu	Asp	Gly
305					310					315					320
Arg	Ile	Gly	Glu	Glu	Glu	Val	Lys	Glu	Ile	Ile	Met	Leu	Ser	Ala	Ser
				325					330					335	
Ala	Asn	Lys	Leu	Ser	Arg	Leu	Lys	Glu	Gln	Ala	Glu	Glu	Tyr	Ala	Ala
			340					345					350		
Leu	Ile	Met	Glu	Glu	Leu	Asp	Pro	Glu	Arg	Leu	Gly	Tyr	Ile	Glu	Leu
		355					360					365			
Trp	Gln	Leu	Glu	Thr	Leu	Leu	Gln	Lys	Asp	Thr	Tyr	Leu	Asn	Tyr	
	370				375					380					
Ser	Gln	Ala	Leu	Ser	Tyr	Thr	Ser	Gln	Ala	Leu	Ser	Gln	Asn	Leu	Gln
385					390					395					400
Gly	Leu	Arg	Lys	Arg	Ser	Pro	Ile	Arg	Arg	Met	Ser	Thr	Lys	Leu	Val
				405					410					415	
Tyr	Ser	Leu	Gln	Glu	Asn	Trp	Lys	Arg	Ile	Trp	Val	Leu	Val	Leu	Trp
			420					425					430		
Ile	Leu	Ile	Met	Ile	Gly	Leu	Phe	Leu	Trp	Lys	Phe	Tyr	Gln	Tyr	Lys
		435					440					445			
Gln	Lys	Ser	Ala	Phe	Gln	Val	Met	Gly	Tyr	Cys	Leu	Leu	Thr	Ala	Lys
	450					455					460				
Gly	Ala	Ala	Glu	Thr	Leu	Lys	Phe	Asn	Met	Ala	Leu	Ile	Leu	Leu	Pro
465					470					475					480
Val	Cys	Arg	Asn	Thr	Ile	Thr	Phe	Leu	Arg	Ser	Thr	Lys	Leu	Ser	Cys
				485					490					495	
Phe	Val	Pro	Phe	Asp	Asp	Asn	Ile	Asn	Phe	His	Lys	Thr	Val	Ala	Ala
			500					505					510		
Ala	Ile	Val	Thr	Gly	Ile	Ile	Leu	His	Ala	Gly	Asn	His	Leu	Val	Cys
		515					520					525			
Asp	Phe	Pro	Lys	Leu	Ile	His	Ala	Asn	Ser	Thr	Asn	Tyr	Gln	Lys	Tyr
	530					535					540				
Leu	Val	Asn	Asp	Phe	Gly	Pro	Ser	Gln	Pro	Gln	Tyr	Ile	Asp	Leu	Val
545					550					555					560
Lys	Gly	Val	Glu	Gly	Val	Thr	Gly	Ile	Val	Met	Val	Ile	Leu	Met	Ala
				565					570					575	
Ile	Ala	Phe	Thr	Leu	Ala	Thr	Arg	Trp	Phe	Arg	Arg	Ser	Leu	Ile	Lys
			580					585					590		
Leu	Pro	Lys	Pro	Phe	Asp	Arg	Leu	Thr	Gly	Phe	Asn	Ala	Phe	Trp	Tyr
		595					600					605			
Ser	His	His	Leu	Leu	Ile	Ile	Val	Tyr	Ile	Val	Leu	Ile	Ile	His	Gly
	610					615						620			
Thr	Phe	Leu	Tyr	Leu	Val	His	Asn	Trp	Tyr	Ser	Lys	Thr	Thr	Trp	Met
625					630					635					640
Tyr	Ile	Ala	Val	Pro	Val	Leu	Leu	Tyr	Ala	Gly	Glu	Arg	Thr	Leu	Arg
				645					650					655	
Phe	Phe	Arg	Ser	Gly	Leu	Tyr	Ser	Val	Arg	Leu	Leu	Lys	Val	Ala	Ile
			660					665					670		
Tyr	Pro	Gly	Asn	Val	Leu	Thr	Leu	Gln	Met	Ser	Lys	Pro	Pro	Gln	Phe
		675					680					685			
Arg	Tyr	Lys	Ser	Gly	Gln	Tyr	Met	Phe	Val	Gln	Cys	Pro	Ala	Val	Ser
	690					695					700				
Pro	Phe	Glu	Trp	His	Pro	Phe	Ser	Ile	Thr	Ser	Ala	Pro	Gly	Asp	Asp

# Sequence Listing

705	Tyr	Leu	Ser	Ile	His	710	Ile	Arg	Gln	Leu	Gly	715	Asp	Trp	Thr	Gln	Glu	720	Leu
	Lys	Arg	Val	Phe	725	Glu	Ala	Cys	Glu	730	Gln	Pro	Glu	Ala	Gly	735	Lys	Ser	
	Gly	Leu	Leu	Arg	740	Ala	Asp	Glu	Asn	745	Thr	Lys	Thr	Ser	Leu	Pro	Lys	Leu	
	Leu	Ile	Asp	Gly	755	Pro	Tyr	Gly	Ala	760	Pro	Ala	Gln	Asp	Tyr	Arg	Lys	Tyr	
	Asp	Val	Leu	Leu	770	Val	Gly	Leu	Gly	775	Ile	Gly	Ala	Thr	Pro	Phe	Ile		
785	Ser	Ile	Leu	Lys	790	Leu	Leu	Lys	Asn	795	Ile	Val	Ala	Met	Glu	Glu	Gln		
	Ala	Asp	Leu	Val	805	Ser	Asp	Phe	Ser	810	Asn	Ser	Asp	Met	Ser	Ala	Ala		
	Thr	Ser	Glu	Gln	820	Pro	Ala	Leu	Asn	825	Lys	Ile	Ser	Pro	Lys	Lys	Arg	Lys	
	Ser	Thr	Leu	Lys	835	Thr	Thr	Asn	Ala	840	Tyr	Phe	Tyr	Trp	Val	Thr	Arg	Glu	
	Gln	Gly	Ser	Phe	850	Trp	Phe	Lys	Gly	855	Val	Met	Asn	Glu	Val	Ala	Glu		
865	Leu	Asp	Gln	Arg	870	Gly	Val	Ile	Glu	875	Met	His	Asn	Tyr	Leu	Thr	Ser	Val	
	Tyr	Glu	Glu	Gly	885	Asp	Ala	Arg	Ser	890	Ala	Leu	Ile	Thr	Met	Val	Gln	Ala	
	Leu	Asn	His	Ala	900	Lys	Asn	Gly	Val	905	Asp	Ile	Val	Ser	Gly	Thr	Ser	Val	
	Arg	Thr	His	Phe	915	Ala	Arg	Pro	Asn	920	Trp	Arg	Lys	Val	Phe	Ser	Lys	Thr	
	Leu	Thr	Lys	His	930	Ala	Asn	Ala	Arg	935	Ile	Gly	Val	Phe	Tyr	Cys	Gly	Ala	
945	Pro	Ile	Leu	Ala	945	Lys	Glu	Leu	Ser	950	Gln	Leu	Cys	Lys	Glu	Phe	Asn	Gln	
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	1				5					10						
tca	ttt	gat	tca	gtt	tcc	gcc	gga	aaa	acc	gcc	gtc	gga	agt	gca	tca	98
Ser	Phe	Asp	Ser	Val	Ser	Ala	Gly	Lys	Thr	Ala	Val	Gly	Ser	Ala	Ser	
	15				20					25						
act	tca	ccg	gga	act	gaa	tac	tcc	att	aac	ggt	gat	caa	gag	ttc	gtt	146
Thr	Ser	Pro	Gly	Thr	Glu	Tyr	Ser	Ile	Asn	Gly	Asp	Gln	Glu	Phe	Val	
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gaa	gtc	aca	atc	gat	ctt	caa	gac	gat	gac	aca	atc	gtt	ctt	cgt	agc	194
Glu	Val	Thr	Ile	Asp	Leu	Gln	Asp	Asp	Asp	Thr	Ile	Val	Leu	Arg	Ser	
	45				50					55					60	
gtc	gag	cca	gca	acc	gcc	att	aat	gtc	atc	gga	gat	atc	tcc	gac	gac	242
Val	Glu	Pro	Ala	Thr	Ala	Ile	Asn	Val	Ile	Gly	Asp	Ile	Ser	Asp	Asp	
				65					70					75		
aac	acc	gga	ata	atg	act	ccg	gtt	tcg	att	tcg	aga	tct	ccg	acg	atg	290
Asn	Thr	Gly	Ile	Met	Thr	Pro	Val	Ser	Ile	Ser	Arg	Ser	Pro	Thr	Met	
			80					85					90			

Sequence Listing																
aaa Lys	cga Arg	act Thr 95	tca Ser	tct Ser	aat Asn	cgg Arg	ttc Phe 100	cga Arg	caa Gln	ttc Phe	tca Ser	caa Gln 105	gag Glu	ctt Leu	aaa Lys	338
gcc Ala 110	gaa Glu	gct Ala	gtg Val	gcg Ala	aaa Lys	gcg Ala 115	aaa Lys	cag Gln	tta Leu	tct Ser	cag Gln 120	gag Glu	ttg Leu	aaa Lys	cga Arg	386
ttc Phe 125	tca Ser	tggt Trp	tct Ser	cgt Arg	tct Ser 130	ttc Phe	tca Ser	ggt Gly	aac Asn	tta Leu	acc Thr	act Thr	act Thr	agt Ser	acc Thr 140	434
gcc Ala	gct Ala	aat Asn	caa Gln	agc Ser 145	ggc Gly	ggt Gly	gct Ala	ggt Gly	ggt Gly 150	ttg Leu	gtg Val	aac Asn	tcg Ser 155	gct Ala		482
tta Leu	gaa Glu	gcg Ala	cga Arg 160	gcg Ala	ttg Leu	cga Arg	aag Lys	caa Gln	cgt Arg	gct Ala	cag Gln	tta Leu	gat Asp 170	cgg Arg	act Thr	530
cgg Arg	tct Ser	agt Ser 175	gct Ala	caa Gln	aga Arg	gct Ala	ctt Leu 180	cgt Arg	ggt Gly	ttg Leu	aga Arg	ttc Phe 185	att Ile	agc Ser	aat Asn	578
aag Lys 190	caa Gln	aag Lys	aac Asn	gtt Val	gat Asp	ggt Gly 195	tggt Trp	aac Asn	gat Asp	gtt Val	caa Gln 200	tca Ser	aat Asn	ttc Phe	gaa Glu	626
aaa Lys 205	ttc Phe	gaa Glu	aaa Lys	aat Asn	ggt Gly 210	atc Tyr	tat Ile	tyr Tyr	arg Arg	tcc Ser 215	gat Asp	ttc Phe	gct Ala	caa Gln	tgc Cys 220	674
ata Ile	gga Gly	atg Met	aaa Lys	gat Asp 225	tcg Ser	aaa Lys	gaa Glu	ttt Phe	gca Ala 230	ttg Leu	gaa Glu	ctg Leu	ttc Phe	gat Asp 235	gca Ala	722
ttg Leu	agt Ser	aga Arg	aga Arg 240	aga Arg	ttt Leu	aaa Lys	gta Val 245	gag Glu	aaa Lys	atc Ile	aat Asn	cac His 250	gat Asp	gag Glu		770
ctt Leu	tat Tyr	gag Glu 255	tat Tyr	tggt Trp	tca Ser	caa Gln	atc Ile 260	aac Asn	gac Asp	gag Glu	agt Ser	ttt Phe 265	gat Asp	tct Ser	cgt Arg	818
ctc Leu 270	cag Gln	atc Ile	ttc Phe	ttc Phe	gac Asp	ata Ile 275	gtg Val	gac Asp	aag Lys	aat Asn	gaa Glu 280	gat Asp	ggg Gly	aga Arg	att Ile	866
aca Thr 285	gaa Glu	gag Glu	gaa Glu	gta Val	aaa Lys 290	gag Glu	ata Ile	ata Ile	atg Met	ttg Leu 295	agt Ser	gca Ala	tct Ser	gca Ala	aat Asn 300	914
aag Lys	cta Leu	tca Ser	aga Arg	tta Leu 305	aag Lys	gaa Glu	caa Gln	gca Ala	gag Glu 310	gaa Glu	tat Tyr	gca Ala	gct Ala	ttg Leu 315	att Ile	962
atg Met	gaa Glu	gag Glu	tta Leu 320	gat Asp	cct Pro	gaa Glu	aga Arg	ctt Leu 325	ggc Gly	tac Tyr	ata Ile	gag Glu 330	cta Leu	tggt Trp	caa Gln	1010
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gca Ala 350	ttg Leu	agc Ser	tat Tyr	acg Thr	agc Ser	caa Gln 355	gca Ala	ttg Leu	agc Ser	caa Gln 360	aac Asn	ctt Leu	caa Gln	ggg Gly	tta Leu	1106
agg Arg 365	gga Gly	aag Lys	agt Ser	cga Arg	ata Ile 370	cat His	aga Arg	atg Met	agt Ser	tcg Asp 375	gat Phe	ttc Val	gtc Tyr	tac Tyr	att Ile 380	1154
atg Met	caa Gln	gag Glu	aat Asn	tggt Trp 385	aaa Lys	agg Arg	ata Ile	tggt Trp 390	gtt Val	tta Leu	tcc Ser	tta Leu	tggt Trp 395	atc Ile	atg Met	1202
atc Ile	atg Met	atc Ile	gga Gly 400	tta Leu	ttc Phe	ttg Leu	tggt Trp 405	aaa Lys	ttc Phe	ttc Phe	caa Gln	tac Tyr	aag Lys 410	caa Gln	aaa Lys	1250
gat Asp	gca Ala	ttt Phe 415	cat His	gtg Val	atg Met	gga Gly	tat Tyr 420	tgt Cys	tta Leu	ctc Leu	aca Thr	gcc Ala 425	aaa Lys	gga Gly	gca Ala	1298

# Sequence Listing

gct	gaa	aca	ctt	aaa	ttc	aac	atg	gct	cta	ata	ctt	ttc	cca	ggt	tgc	1346
Ala	Glu	Thr	Leu	Lys	Phe	Asn	Met	Ala	Leu	Ile	Leu	Phe	Pro	Val	Cys	
430						435					440					
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Arg	Asn	Thr	Ile	Thr	Trp	Leu	Arg	Ser	Thr	Arg	Leu	Ser	Tyr	Phe	Val	
445					450					455					460	
cct	ttt	gat	gat	aat	atc	aac	ttc	cac	aag	aca	att	gct	gga	gcc	att	1442
Pro	Phe	Asp	Asp	Asn	Ile	Asn	Phe	His	Lys	Thr	Ile	Ala	Gly	Ala	Ile	
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gta	gta	gct	gtg	atc	ctt	cat	att	gga	gac	cat	ctt	gct	tgt	gat	ttc	1490
Val	Val	Ala	Val	Ile	Leu	His	Ile	Gly	Asp	His	Leu	Ala	Cys	Asp	Phe	
			480					485					490			
cct	aga	att	gtt	aga	gcc	acc	gaa	tac	gat	tac	aat	cgg	tat	ctg	ttt	1538
Pro	Arg	Ile	Val	Arg	Ala	Thr	Glu	Tyr	Asp	Tyr	Asn	Arg	Tyr	Leu	Phe	
		495					500					505				
cat	tac	ttt	caa	aca	aaa	cag	cca	aca	tac	ttc	gac	ctc	ggt	aag	gga	1586
His	Tyr	Phe	Gln	Thr	Lys	Gln	Pro	Thr	Tyr	Phe	Asp	Leu	Val	Lys	Gly	
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cct	gaa	gga	atc	act	ggg	att	tta	atg	gtc	att	ttg	atg	att	att	tca	1634
Pro	Glu	Gly	Ile	Thr	Gly	Ile	Leu	Met	Val	Ile	Leu	Met	Ile	Ile	Ser	
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Phe	Thr	Leu	Ala	Thr	Arg	Trp	Phe	Arg	Arg	Asn	Leu	Val	Lys	Leu	Pro	
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aag	cca	ttt	gat	cga	cta	acc	ggt	ttt	aac	gcc	ttt	tggt	tat	tcg	cat	1730
Lys	Pro	Phe	Asp	Arg	Leu	Thr	Gly	Phe	Asn	Ala	Phe	Trp	Tyr	Ser	His	
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cat	ttg	ttc	gtc	att	gtt	tat	atc	ttg	ctt	att	ctt	cat	ggt	atc	ttc	1778
His	Leu	Phe	Val	Ile	Val	Tyr	Ile	Leu	Leu	Ile	Leu	His	Gly	Ile	Phe	
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ctc	tat	ttc	gcc	aag	cct	tggt	tat	gtt	cgt	acg	aca	tggt	atg	tat	ctt	1826
Leu	Tyr	Phe	Ala	Lys	Pro	Trp	Tyr	Val	Arg	Thr	Thr	Trp	Met	Tyr	Leu	
	590					595					600					
gca	gta	cca	gtt	tta	ctc	ggt	gga	gaa	aga	aca	ctt	agg	tac	ttc		1874
Ala	Val	Pro	Val	Leu	Leu	Tyr	Gly	Gly	Glu	Arg	Thr	Leu	Arg	Tyr	Phe	
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Arg	Ser	Gly	Ser	Tyr	Ser	Val	Arg	Leu	Leu	Lys	Val	Ala	Ile	Tyr	Pro	
				625					630					635		
ggt	aat	gtt	cta	acg	cta	caa	atg	tcg	aaa	cca	act	caa	ttt	cgt	tac	1970
Gly	Asn	Val	Leu	Thr	Leu	Gln	Met	Ser	Lys	Pro	Thr	Gln	Phe	Arg	Tyr	
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aaa	agc	gga	caa	tac	atg	ttt	gtc	caa	tgt	cct	gcg	gtt	tcg	cca	ttc	2018
Lys	Ser	Gly	Gln	Tyr	Met	Phe	Val	Gln	Cys	Pro	Ala	Val	Ser	Pro	Phe	
		655				660						665				
gag	tggt	cat	cca	ttc	tca	att	act	tcc	gca	cct	gaa	gat	gat	tat	atc	2066
Glu	Trp	His	Pro	Phe	Ser	Ile	Thr	Ser	Ala	Pro	Glu	Asp	Asp	Tyr	Ile	
	670					675					680					
agc	att	cac	att	aga	caa	ctt	ggt	gat	tggt	act	caa	gaa	ctc	aaa	aga	2114
Ser	Ile	His	Ile	Arg	Gln	Leu	Gly	Asp	Trp	Thr	Gln	Glu	Leu	Lys	Arg	
685					690					695					700	
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Val	Phe	Ser	Glu	Val	Cys	Glu	Pro	Pro	Val	Gly	Gly	Lys	Ser	Gly	Leu	
				705					710					715		
ctc	aga	gcc	gac	gaa	aca	aca	aag	aaa	agt	ttg	cca	aag	cta	ttg	ata	2210
Leu	Arg	Ala	Asp	Glu	Thr	Thr	Lys	Lys	Ser	Leu	Pro	Lys	Leu	Leu	Ile	
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gat	gga	ccg	tac	ggt	gca	cca	gca	caa	gat	tat	agg	aaa	tat	gat	gtt	2258
Asp	Gly	Pro	Tyr	Gly	Ala	Pro	Ala	Gln	Asp	Tyr	Arg	Lys	Tyr	Asp	Val	
		735					740					745				
ctc	tta	tta	gtt	ggt	ctt	ggc	att	ggt	gca	act	cca	ttt	atc	agt	atc	2306
Leu	Leu	Leu	Val	Gly	Leu	Gly	Ile	Gly	Ala	Thr	Pro	Phe	Ile	Ser	Ile	
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# Sequence Listing

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765 770 775 780
tcg atc tcg gat ttc agt aga tca tca gaa tac agc aca gga agc aac 2402
Ser Ile Ser Asp Phe Ser Arg Ser Ser Glu Tyr Ser Thr Gly Ser Asn
785 790 795
ggt gac acg cca aga cga aag aga ata cta aaa acc aca aat gct tat 2450
Gly Asp Thr Pro Arg Arg Lys Arg Ile Leu Lys Thr Thr Asn Ala Tyr
800 805 810
ttc tac tgg gtc aca aga gaa caa ggc tct ttt gat tgg ttc aaa ggt 2498
Phe Tyr Trp Val Thr Arg Glu Gln Gly Ser Phe Asp Trp Phe Lys Gly
815 820 825
gtc atg aac gaa gtt gca gaa ctt gac caa cgg ggt gtg ata gag atg 2546
Val Met Asn Glu Val Ala Glu Leu Asp Gln Arg Gly Val Ile Glu Met
830 835 840
cat aac tat tta aca agt gtg tat gaa gaa ggt gat gct cgt tct gct 2594
His Asn Tyr Leu Thr Ser Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala
845 850 855 860
ctc att aca atg gtt caa gct ctt aat cat gcc aaa aat ggt gtc gac 2642
Leu Ile Thr Met Val Gln Ala Leu Asn His Ala Lys Asn Gly Val Asp
865 870 875
att gtc tct ggc act agg gtc aga aca cac ttt gca aga cct aat tgg 2690
Ile Val Ser Gly Thr Arg Val Arg Thr His Phe Ala Arg Pro Asn Trp
880 885 890
aag aag gtt ctc aca aag cta agt tcc aag cat tgc aat gca aga aca 2738
Lys Lys Val Leu Thr Lys Leu Ser Ser Lys His Cys Asn Ala Arg Thr
895 900 905
gga gtg ttt tat tgc gga gta ccg gtt tta ggg aag gag ctt agc aaa 2786
Gly Val Phe Tyr Cys Gly Val Pro Val Leu Gly Lys Glu Leu Ser Lys
910 915 920
cta tgc aac aca ttc aat caa aaa ggt tca acc aag ttt gaa ttt cac 2834
Leu Cys Asn Thr Phe Asn Gln Lys Gly Ser Thr Lys Phe Glu Phe His
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Lys Glu His Phe
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aagtgattaa acgttaacac actgtcaaaa gtgagtgtgt taacgttttag ctccacacgt 3006
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Met Thr Pro Val Ser Ile Ser Arg Ser Pro Thr Met Lys Arg Thr Ser
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Ser Asn Arg Phe Arg Gln Phe Ser Gln Glu Leu Lys Ala Glu Ala Val
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Ala Lys Ala Lys Gln Leu Ser Gln Glu Leu Lys Arg Phe Ser Trp Ser
115 120 125
Arg Ser Phe Ser Gly Asn Leu Thr Thr Thr Ser Thr Ala Ala Asn Gln
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ser Gly Gly Ala Gly Gly Gly Leu Val Asn Ser Ala Leu Glu Ala Arg

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# Sequence Listing

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	Val	Asp	Gly	Trp	Asn	Asp	Val	Gln	Ser	Asn	Phe	Glu	Lys	Phe	Glu	Lys
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	Asn	Gly	Tyr	Ile	Tyr	Arg	Ser	Asp	Phe	Ala	Gln	Cys	Ile	Gly	Met	Lys
		210					215					220				
	Asp	Ser	Lys	Glu	Phe	Ala	Leu	Glu	Leu	Phe	Asp	Ala	Leu	Ser	Arg	Arg
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	Arg	Arg	Leu	Lys	Val	Glu	Lys	Ile	Asn	His	Asp	Glu	Leu	Tyr	Glu	Tyr
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	Trp	Ser	Gln	Ile	Asn	Asp	Glu	Ser	Phe	Asp	Ser	Arg	Leu	Gln	Ile	Phe
			260						265					270		
	Phe	Asp	Ile	Val	Asp	Lys	Asn	Glu	Asp	Gly	Arg	Ile	Thr	Glu	Glu	Glu
		275						280					285			
	Val	Lys	Glu	Ile	Ile	Met	Leu	Ser	Ala	Ser	Ala	Asn	Lys	Leu	Ser	Arg
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	Leu	Lys	Glu	Gln	Ala	Glu	Glu	Tyr	Ala	Ala	Leu	Ile	Met	Glu	Glu	Leu
305					310						315					320
	Asp	Pro	Glu	Arg	Leu	Gly	Tyr	Ile	Glu	Leu	Trp	Gln	Leu	Glu	Thr	Leu
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	Leu	Leu	Gln	Lys	Asp	Thr	Tyr	Leu	Asn	Tyr	Ser	Gln	Ala	Leu	Ser	Tyr
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	Leu	Phe	Leu	Trp	Lys	Phe	Phe	Gln	Tyr	Lys	Gln	Lys	Asp	Ala	Phe	His
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	Val	Met	Gly	Tyr	Cys	Leu	Leu	Thr	Ala	Lys	Gly	Ala	Ala	Glu	Thr	Leu
			420						425					430		
	Lys	Phe	Asn	Met	Ala	Leu	Ile	Leu	Phe	Pro	Val	Cys	Arg	Asn	Thr	Ile
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	Thr	Trp	Leu	Arg	Ser	Thr	Arg	Leu	Ser	Tyr	Phe	Val	Pro	Phe	Asp	Asp
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465					470					475						480
	Ile	Leu	His	Ile	Gly	Asp	His	Leu	Ala	Cys	Asp	Phe	Pro	Arg	Ile	Val
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	Arg	Ala	Thr	Glu	Tyr	Asp	Tyr	Asn	Arg	Tyr	Leu	Phe	His	Tyr	Phe	Gln
			500						505					510		
	Thr	Lys	Gln	Pro	Thr	Tyr	Phe	Asp	Leu	Val	Lys	Gly	Pro	Glu	Gly	Ile
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	Thr	Gly	Ile	Leu	Met	Val	Ile	Leu	Met	Ile	Ile	Ser	Phe	Thr	Leu	Ala
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	Thr	Arg	Trp	Phe	Arg	Arg	Asn	Leu	Val	Lys	Leu	Pro	Lys	Pro	Phe	Asp
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	Arg	Leu	Thr	Gly	Phe	Asn	Ala	Phe	Trp	Tyr	Ser	His	His	Leu	Phe	Val
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	Ile	Val	Tyr	Ile	Leu	Leu	Ile	Leu	His	Gly	Ile	Phe	Leu	Tyr	Phe	Ala
			580						585					590		
	Lys	Pro	Trp	Tyr	Val	Arg	Thr	Thr	Trp	Met	Tyr	Leu	Ala	Val	Pro	Val
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	Tyr	Ser	Val	Arg	Leu	Leu	Lys	Val	Ala	Ile	Tyr	Pro	Gly	Asn	Val	Leu
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	Thr	Leu	Gln	Met	Ser	Lys	Pro	Thr	Gln	Phe	Arg	Tyr	Lys	Ser	Gly	Gln
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# Sequence Listing

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675 680 685  
Arg Gln Leu Gly Asp Trp Thr Gln Glu Leu Lys Arg Val Phe Ser Glu  
690 695 700  
Val Cys Glu Pro Pro Val Gly Gly Lys Ser Gly Leu Leu Arg Ala Asp  
705 710 715 720  
Glu Thr Thr Lys Lys Ser Leu Pro Lys Leu Ile Asp Gly Pro Tyr  
725 730 735  
Gly Ala Pro Ala Gln Asp Tyr Arg Lys Tyr Asp Val Leu Leu Leu Val  
740 745 750  
Gly Leu Gly Ile Gly Ala Thr Pro Phe Ile Ser Ile Leu Lys Asp Leu  
755 760 765  
Leu Asn Asn Ile Val Lys Met Glu Glu His Ala Asp Ser Ile Ser Asp  
770 775 780  
Phe Ser Arg Ser Ser Glu Tyr Ser Thr Gly Ser Asn Gly Asp Thr Pro  
785 790 795 800  
Arg Arg Lys Arg Ile Leu Lys Thr Thr Asn Ala Tyr Phe Tyr Trp Val  
805 810 815  
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820 825 830  
Val Ala Glu Leu Asp Gln Arg Gly Val Ile Glu Met His Asn Tyr Leu  
835 840 845  
Thr Ser Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala Leu Ile Thr Met  
850 855 860  
Val Gln Ala Leu Asn His Ala Lys Asn Gly Val Asp Ile Val Ser Gly  
865 870 875 880  
Thr Arg Val Arg Thr His Phe Ala Arg Pro Asn Trp Lys Lys Val Leu  
885 890 895  
Thr Lys Leu Ser Ser Lys His Cys Asn Ala Arg Thr Gly Val Phe Tyr  
900 905 910  
Cys Gly Val Pro Val Leu Gly Lys Glu Leu Ser Lys Leu Cys Asn Thr  
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Met Lys Met Arg Arg Gly Asn Ser Ser Asn Asp His Glu  
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ctt ggg att cta cga gga gct aac tcg gac acc aac tcg gac acg gag 218  
Leu Gly Ile Leu Arg Gly Ala Asn Ser Asp Thr Asn Ser Asp Thr Glu  
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agc atc gct agc gac cgt ggt gcc ttt agc ggt ccg ctt ggc cgg cct 266  
Ser Ile Ala Ser Asp Arg Gly Ala Phe Ser Gly Pro Leu Gly Arg Pro  
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aaa cgt gcg tcc aag aaa aac gca aga ttc gcc gac gat ctt ccc aag 314  
Lys Arg Ala Ser Lys Asn Ala Arg Phe Ala Asp Asp Leu Pro Lys  
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## Sequence Listing

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Gln	Gln	Ala	Ala	Gly	Gly	Gly	Gly	His	Leu	Glu	Asp	Pro	Glu	Leu	Ala	
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ctt	ctt	acg	aag	aag	act	ctc	gag	agc	agc	ctc	aac	aac	acc	acc	tcc	506
Leu	Leu	Thr	Lys	Lys	Thr	Leu	Glu	Ser	Ser	Leu	Asn	Asn	Thr	Thr	Ser	
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Leu	Ser	Phe	Phe	Arg	Ser	Thr	Ser	Ser	Arg	Ile	Lys	Asn	Ala	Ser	Arg	
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Glu	Leu	Arg	Arg	Val	Phe	Ser	Arg	Arg	Pro	Ser	Pro	Ala	Val	Arg	Arg	
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Phe	Asp	Arg	Thr	Ser	Ser	Ala	Ala	Ile	His	Ala	Leu	Lys	Gly	Leu	Lys	
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Phe	Ile	Ala	Thr	Lys	Thr	Ala	Ala	Trp	Pro	Ala	Val	Asp	Gln	Arg	Phe	
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gat	aaa	ctc	tcc	gct	gat	tcc	aac	ggc	ctc	tta	ctc	tct	gcc	aag	ttt	746
Asp	Lys	Leu	Ser	Ala	Asp	Ser	Asn	Gly	Leu	Leu	Leu	Ser	Ala	Lys	Phe	
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Thr	Lys	Glu	Gln	Leu	Arg	Ile	Phe	Trp	Glu	Gln	Ile	Ser	Asp	Glu	Ser	
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Phe	Asp	Ala	Lys	Leu	Gln	Val	Phe	Asp	Met	Val	Asp	Lys	Asp	Glu		
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Asp	Gly	Arg	Val	Thr	Glu	Glu	Glu	Val	Ala	Glu	Ile	Ile	Ser	Leu	Ser	
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Ala	Ser	Ala	Asn	Lys	Leu	Ser	Asn	Ile	Gln	Lys	Gln	Ala	Lys	Glu	Tyr	
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Leu	Arg	Pro	Ala	Lys	Glu	Ser	Asn	Pro	Leu	Leu	Arg	Trp	Ser	Glu	Lys	
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Ile	Lys	Tyr	Phe	Ile	Leu	Asp	Asn	Trp	Gln	Arg	Leu	Trp	Ile	Met	Met	
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tta	tgg	ctt	ggc	atc	tgt	ggc	ctc	ttt	act	tat	aaa	ttc	att	cag		1322
Leu	Trp	Leu	Gly	Ile	Cys	Gly	Gly	Leu	Phe	Thr	Tyr	Lys	Phe	Ile	Gln	
			385				390					395				
tac	aag	aac	aaa	gct	gcc	tat	ggc	gtg	atg	ggc	tat	tgt	ggt	tgt	gtc	1370
Tyr	Lys	Asn	Lys	Ala	Ala	Tyr	Gly	Val	Met	Gly	Tyr	Cys	Val	Cys	Val	
		400					405					410				

# Sequence Listing

gcc	aaa	gga	ggc	gcc	gag	act	ctc	aaa	ttc	aac	atg	gct	ctc	ata	ttg	1418
Ala	Lys	Gly	Gly	Ala	Glu	Thr	Leu	Lys	Phe	Asn	Met	Ala	Leu	Ile	Leu	
	415					420					425					
ttg	cct	gtt	tgt	cga	aac	acc	atc	act	tgg	ctt	agg	aac	aag	acc	aag	1466
Leu	Pro	Val	Cys	Arg	Asn	Thr	Ile	Thr	Trp	Leu	Arg	Asn	Lys	Thr	Lys	
	430				435					440					445	
ctt	ggt	act	gtc	gtt	cct	ttt	gat	gat	agt	ctt	aac	ttc	cac	aag	ggt	1514
Leu	Gly	Thr	Val	Val	Pro	Phe	Asp	Asp	Ser	Leu	Asn	Phe	His	Lys	Val	
				450					455					460		
att	gca	agc	ggg	ata	gtc	gtc	ggt	gtt	ctc	cat	gcg	ggt	gcc	cat		1562
Ile	Ala	Ser	Gly	Ile	Val	Val	Gly	Val	Leu	Leu	His	Ala	Gly	Ala	His	
			465				470					475				
tta	acg	tgt	gat	ttt	cca	cgt	tta	att	gcc	gcg	gat	gag	gac	acc	tat	1610
Leu	Thr	Cys	Asp	Phe	Pro	Arg	Leu	Ile	Ala	Ala	Asp	Glu	Asp	Thr	Tyr	
		480					485					490				
gag	ccg	atg	gaa	aaa	tac	ttt	ggg	gat	caa	ccg	act	agc	tac	tgg	tgg	1658
Glu	Pro	Met	Glu	Lys	Tyr	Phe	Gly	Asp	Gln	Pro	Thr	Ser	Tyr	Trp	Trp	
	495					500					505					
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Phe	Val	Lys	Gly	Val	Glu	Gly	Trp	Thr	Gly	Ile	Val	Met	Val	Val	Leu	
	510				515				520						525	
atg	gct	ata	gcc	ttt	aca	ctc	gct	acg	cct	tgg	ttc	cga	cgt	aac	aag	1754
Met	Ala	Ile	Ala	Phe	Thr	Leu	Ala	Thr	Pro	Trp	Phe	Arg	Arg	Asn	Lys	
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ctt	aac	tta	cct	aac	ttc	ctc	aag	aag	ctt	acc	ggt	ttc	aac	gcc	ttt	1802
Leu	Asn	Leu	Pro	Asn	Phe	Leu	Lys	Lys	Leu	Thr	Gly	Phe	Asn	Ala	Phe	
			545					550				555				
tgg	tac	acc	cac	cat	ttg	ttc	atc	att	gtt	tat	gct	ctt	ctc	att	gtc	1850
Trp	Tyr	Thr	His	His	Leu	Phe	Ile	Ile	Val	Tyr	Ala	Leu	Leu	Ile	Val	
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cat	ggt	atc	aag	ctc	tac	ctc	aca	aag	att	tgg	tat	cag	aag	acg	aca	1898
His	Gly	Ile	Lys	Leu	Tyr	Leu	Thr	Lys	Ile	Trp	Tyr	Gln	Lys	Thr	Thr	
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Trp	Met	Tyr	Leu	Ala	Val	Pro	Ile	Leu	Leu	Tyr	Ala	Ser	Glu	Arg	Leu	
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ctc	cgt	gct	ttc	aga	tca	agc	atc	aaa	ccg	gtt	aag	atg	atc	aag	gtg	1994
Leu	Arg	Ala	Phe	Arg	Ser	Ser	Ile	Lys	Pro	Val	Lys	Met	Ile	Lys	Val	
			610						615					620		
gct	gtt	tac	ccc	ggg	aac	gtg	ttg	tct	cta	cac	atg	acg	aag	cca	caa	2042
Ala	Val	Tyr	Pro	Gly	Asn	Val	Leu	Ser	Leu	His	Met	Thr	Lys	Pro	Gln	
			625					630					635			
gga	ttc	aaa	tac	aaa	agt	gga	cag	ttc	atg	ttg	gtg	aac	tgc	cga	gcc	2090
Gly	Phe	Lys	Tyr	Lys	Ser	Gly	Gln	Phe	Met	Leu	Val	Asn	Cys	Arg	Ala	
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gta	tct	cca	ttc	gaa	tgg	cat	cct	ttc	tca	atc	aca	tca	gct	ccc	gga	2138
Val	Ser	Pro	Phe	Glu	Trp	His	Pro	Phe	Ser	Ile	Thr	Ser	Ala	Pro	Gly	
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gac	gat	tac	ctg	agc	gta	cat	atc	cgc	act	ctc	ggt	gac	tgg	aca	cgt	2186
Asp	Asp	Tyr	Leu	Ser	Val	His	Ile	Arg	Thr	Leu	Gly	Asp	Trp	Thr	Arg	
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Lys	Leu	Arg	Thr	Val	Phe	Ser	Glu	Val	Cys	Lys	Pro	Pro	Thr	Ala	Gly	
				690					695					700		
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Lys	Ser	Gly	Leu	Leu	Arg	Ala	Asp	Gly	Gly	Asp	Gly	Asn	Leu	Pro	Phe	
		705						710					715			
ccg	aag	gtc	ctt	atc	gac	ggt	cca	tac	ggt	gct	ccc	gca	caa	gac	tac	2330
Pro	Lys	Val	Leu	Ile	Asp	Gly	Pro	Tyr	Gly	Ala	Pro	Ala	Gln	Asp	Tyr	
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aag	aaa	tac	gac	gtg	gta	ctc	ctc	gta	ggt	ctc	ggc	att	gga	gcc	acg	2378
Lys	Lys	Tyr	Asp	Val	Val	Leu	Leu	Val	Gly	Leu	Gly	Ile	Gly	Ala	Thr	
	735					740					745					

# Sequence Listing

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gac cgc gac agc gac att gag aac aat aac agt aac aac aat agt aaa	2474
Asp Arg Asp Ser Asp Ile Glu Asn Asn Asn Ser Asn Asn Asn Ser Lys	
770 775 780	
ggg ttt aag aca agg aaa gct tat ttc tac tgg gtg act agg gaa caa	2522
Gly Phe Lys Thr Arg Lys Ala Tyr Phe Tyr Trp Val Thr Arg Glu Gln	
785 790 795	
gga tca ttc gag tgg ttc aag gga ata atg gac gag att tcg gag tta	2570
Gly Ser Phe Glu Trp Phe Lys Gly Ile Met Asp Glu Ile Ser Glu Leu	
800 805 810	
gac gag gaa gga atc atc gag ctt cac aat tat tgc acg agt gtg tac	2618
Asp Glu Glu Gly Ile Ile Glu Leu His Asn Tyr Cys Thr Ser Val Tyr	
815 820 825	
gag gaa ggt gat gca aga gtg gct ctc att gcc atg ctt cag tcg ttg	2666
Glu Glu Gly Asp Ala Arg Val Ala Leu Ile Ala Met Leu Gln Ser Leu	
830 835 840 845	
caa cac gct aag aac ggt gtg gat gtt gtg tcg ggt aca cgt gtc aag	2714
Gln His Ala Lys Asn Gly Val Asp Val Val Ser Gly Thr Arg Val Lys	
850 855 860	
tcc cac ttc gct aaa cct aac tgg aga caa gtc tac aag aag atc gct	2762
Ser His Phe Ala Lys Pro Asn Trp Arg Gln Val Tyr Lys Lys Ile Ala	
865 870 875	
gtt caa cat ccc ggc aaa aga ata gga gtc ttc tac tgt gga atg cca	2810
Val Gln His Pro Gly Lys Arg Ile Gly Val Phe Tyr Cys Gly Met Pro	
880 885 890	
gga atg ata aag gaa tta aaa aat cta gct ttg gat ttt tct cga aag	2858
Gly Met Ile Lys Glu Leu Lys Asn Leu Ala Leu Asp Phe Ser Arg Lys	
895 900 905	
aca act acc aag ttt gac ttc cac aaa gag aac ttc tagattaatt	2904
Thr Thr Thr Lys Phe Asp Phe His Lys Glu Asn Phe	
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35 40 45	
Ser Lys Lys Asn Ala Arg Phe Ala Asp Asp Leu Pro Lys Arg Ser Asn	
50 55 60	
Ser Val Ala Gly Gly Arg Gly Asp Asp Asp Glu Tyr Val Glu Ile Thr	
65 70 75 80	
Leu Asp Ile Arg Asp Ser Val Ala Val His Ser Val Gln Gln Ala	
85 90 95	
Ala Gly Gly Gly Gly His Leu Glu Asp Pro Glu Leu Ala Leu Leu Thr	
100 105 110	
Lys Lys Thr Leu Glu Ser Ser Leu Asn Asn Thr Thr Ser Leu Ser Phe	
115 120 125	
Phe Arg Ser Thr Ser Ser Arg Ile Lys Asn Ala Ser Arg Glu Leu Arg	
130 135 140	
Arg Val Phe Ser Arg Arg Pro Ser Pro Ala Val Arg Arg Phe Asp Arg	
145 150 155 160	
Thr Ser Ser Ala Ala Ile His Ala Leu Lys Gly Leu Lys Phe Ile Ala	
165 170 175	

# Sequence Listing

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Leu	Gly	Met	Asn	Lys	Glu	Ser	Lys	Asp	Phe	Ala	Asp	Gln	Leu	Phe	Arg
	210					215					220				
Ala	Leu	Ala	Arg	Arg	Asn	Asn	Val	Ser	Gly	Asp	Ala	Ile	Thr	Lys	Glu
225					230					235					240
Gln	Leu	Arg	Ile	Phe	Trp	Glu	Gln	Ile	Ser	Asp	Glu	Ser	Phe	Asp	Ala
				245					250					255	
Lys	Leu	Gln	Val	Phe	Phe	Asp	Met	Val	Asp	Lys	Asp	Glu	Asp	Gly	Arg
			260					265					270		
Val	Thr	Glu	Glu	Glu	Val	Ala	Glu	Ile	Ile	Ser	Leu	Ser	Ala	Ser	Ala
	275						280					285			
Asn	Lys	Leu	Ser	Asn	Ile	Gln	Lys	Gln	Ala	Lys	Glu	Tyr	Ala	Ala	Leu
	290					295					300				
Ile	Met	Glu	Glu	Leu	Asp	Pro	Asp	Asn	Ala	Gly	Phe	Ile	Met	Ile	Glu
305					310					315					320
Asn	Leu	Glu	Met	Leu	Leu	Leu	Gln	Ala	Pro	Asn	Gln	Ser	Val	Arg	Met
				325					330					335	
Gly	Asp	Ser	Arg	Ile	Leu	Ser	Gln	Met	Leu	Ser	Gln	Lys	Leu	Arg	Pro
			340					345					350		
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Phe	Ile	Leu	Asp	Asn	Trp	Gln	Arg	Leu	Trp	Ile	Met	Met	Leu	Trp	Leu
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Gly	Ile	Cys	Gly	Gly	Leu	Phe	Thr	Tyr	Lys	Phe	Ile	Gln	Tyr	Lys	Asn
385					390					395					400
Lys	Ala	Ala	Tyr	Gly	Val	Met	Gly	Tyr	Cys	Val	Cys	Val	Ala	Lys	Gly
				405					410					415	
Gly	Ala	Glu	Thr	Leu	Lys	Phe	Asn	Met	Ala	Leu	Ile	Leu	Leu	Pro	Val
			420					425					430		
Cys	Arg	Asn	Thr	Ile	Thr	Trp	Leu	Arg	Asn	Lys	Thr	Lys	Leu	Gly	Thr
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Gly	Ile	Val	Val	Gly	Val	Leu	Leu	His	Ala	Gly	Ala	His	Leu	Thr	Cys
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Asp	Phe	Pro	Arg	Leu	Ile	Ala	Ala	Asp	Glu	Asp	Thr	Tyr	Glu	Pro	Met
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Glu	Lys	Tyr	Phe	Gly	Asp	Gln	Pro	Thr	Ser	Tyr	Trp	Trp	Phe	Val	Lys
			500					505					510		
Gly	Val	Glu	Gly	Trp	Thr	Gly	Ile	Val	Met	Val	Val	Leu	Met	Ala	Ile
	515						520					525			
Ala	Phe	Thr	Leu	Ala	Thr	Pro	Trp	Phe	Arg	Arg	Asn	Lys	Leu	Asn	Leu
	530					535					540				
Pro	Asn	Phe	Leu	Lys	Lys	Leu	Thr	Gly	Phe	Asn	Ala	Phe	Trp	Tyr	Thr
545					550					555					560
His	His	Leu	Phe	Ile	Ile	Val	Tyr	Ala	Leu	Leu	Ile	Val	His	Gly	Ile
				565					570					575	
Lys	Leu	Tyr	Leu	Thr	Lys	Ile	Trp	Tyr	Gln	Lys	Thr	Thr	Trp	Met	Tyr
			580					585					590		
Leu	Ala	Val	Pro	Ile	Leu	Leu	Tyr	Ala	Ser	Glu	Arg	Leu	Leu	Arg	Ala
		595					600					605			
Phe	Arg	Ser	Ser	Ile	Lys	Pro	Val	Lys	Met	Ile	Lys	Val	Ala	Val	Tyr
	610					615					620				
Pro	Gly	Asn	Val	Leu	Ser	Leu	His	Met	Thr	Lys	Pro	Gln	Gly	Phe	Lys
625					630					635					640
Tyr	Lys	Ser	Gly	Gln	Phe	Met	Leu	Val	Asn	Cys	Arg	Ala	Val	Ser	Pro
				645					650					655	
Phe	Glu	Trp	His	Pro	Phe	Ser	Ile	Thr	Ser	Ala	Pro	Gly	Asp	Asp	Tyr
			660					665					670		
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Gly	Pro	Leu	Ser	Gly	Pro	Leu	Asn	Lys	Arg	Gly	Gly	Lys	Lys	Ser	Ala	
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Arg	Phe	Asn	Ile	Pro	Glu	Ser	Thr	Asp	Ile	Gly	Thr	Ser	Val	Gly	Thr	
ggc	ggc	aag	tcc	aat	gat	gat	gcg	tac	gtt	gaa	atc	act	ctc	gat	gtc	543
Gly	Gly	Lys	Ser	Asn	Asp	Asp	Ala	Tyr	Val	Glu	Ile	Thr	Leu	Asp	Val	
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Arg	Glu	Asp	Ser	Val	Ala	Val	His	Ser	Val	Lys	Thr	Ala	Gly	Gly	Asp	



## Page 33

Sequence Listing																
80				85				90								
gac Asp	gtg Val 95	gaa Glu	gat Asp	ccc Pro	gag Glu	ctg Leu 100	gct Ala	tta Leu	ttg Leu	gct Ala	aaa Lys 105	ggc Gly	tta Leu	gag Glu	aag Lys	639
aag Lys 110	tcc Ser	act Thr	tta Leu	gga Gly	tct Ser 115	tca Ser	ctt Leu	gtt Val	cga Arg	aat Asn 120	gct Ala	tcg Ser	tct Ser	aga Arg	att Ile 125	687
cgg Arg	caa Gln	gtg Val	tca Ser 130	caa Gln	gag Glu	ctc Leu	agg Arg	cgt Arg	ttg Leu 135	gct Ala	tcc Ser	tta Leu	aat Asn	aaa Lys 140	cgc Arg	735
cca Pro	att Ile	cct Pro	act Thr 145	gga Gly	agg Arg	ttc Phe	gac Asp	agg Arg 150	aat Asn	aaa Lys	tca Ser	gct Ala 155	gct Ala	gct Ala	cat His	783
gct Ala	ctt Leu	aaa Lys 160	ggg Gly	ctc Leu	aag Lys	ttt Phe 165	att Ile	agt Ser	aag Lys	acc Thr	gac Asp	ggc Gly 170	ggc Gly	gct Ala	ggt Gly	831
tgg Trp	gcc Ala 175	gcc Ala	gtc Val	gag Glu	aag Lys	cgg Arg 180	ttc Phe	gat Asp	gag Glu	att Ile	act Thr 185	tct Ser	act Thr	act Thr		879
ggg Gly 190	ttg Leu	ctt Leu	cct Pro	cgt Arg	gcc Ala 195	aaa Lys	ttt Phe	gga Gly	gaa Glu	tgt Cys 200	ata Ile	ggg Gly	atg Met	aat Asn	aag Lys 205	927
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aga Arg	aac Asn	att Ile 225	aca Thr	act Thr	gat Asp	tcc Ser	att Ile 230	aac Asn	aaa Lys	gca Ala	cag Gln	ctc Leu 235	aaa Lys	gag Glu	ttc Phe	1023
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aaa Lys	gtc Val 400	atg Met	ggg Gly	ccc Pro	tgt Cys	gtg Val	tgt Cys 405	ttt Phe	gcc Ala	aaa Lys	ggg Gly	gct Ala 410	gct Ala	gaa Glu	aca Thr	1551
ctc Leu	aag Lys	ctc Leu	aac Asn	atg Met	gca Ala	att Ile	att Ile	tta Leu	ttt Phe	ccg Pro	gtt Val	tgc Cys	aga Arg	aac Asn	acg Thr	1599

# Sequence Listing

415	atc	aca	tgg	ctt	cga	aat	acc	aga	tta	ggc	gct	gct	cct	ttt	1647
	Ile	Thr	Trp	Leu	Arg	Asn	Lys	Thr	Leu	Gly	Ala	Ala	Val	Pro	Phe
430	gat	gat	aac	ctt	aat	ttt	cac	aaa	gtg	ata	gca	gtg	gca	att	gct
	Asp	Asp	Asn	Leu	Asn	Phe	His	Lys	Val	Ile	Ala	Val	Ala	Ile	Ala
440	ggg	gtt	gga	ata	cac	gga	cta	tct	cac	ttg	aca	tgt	gat	ttt	cct
	Gly	Val	Gly	Ile	His	Gly	Leu	Ser	His	Leu	Thr	Cys	Asp	Phe	Pro
450	ctt	tta	aat	gct	agt	gaa	gaa	gaa	tat	gaa	cca	atg	aag	tac	tat
	Leu	Leu	Asn	Ala	Ser	Glu	Glu	Glu	Tyr	Glu	Pro	Met	Lys	Tyr	Tyr
460	gga	gat	cag	cca	gaa	agc	tat	tgg	tgg	ttt	ata	aaa	gga	gta	gaa
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	Val	Thr	Gly	Ile	Ile	Met	Val	Val	Leu	Met	Ala	Ile	Ala	Phe	Thr
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	Ala	Thr	Pro	Trp	Phe	Arg	Arg	Asn	Arg	Val	Ser	Leu	Pro	Lys	Pro
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	His	Lys	Leu	Thr	Gly	Xaa	Asn	Ala	Phe	Trp	Tyr	Ser	His	His	Leu
500	gtt	atc	gtc	tac	act	ctg	ttc	att	gtg	cat	ggc	gaa	aag	cta	tac
	Val	Ile	Val	Tyr	Thr	Leu	Phe	Ile	Val	His	Gly	Glu	Lys	Leu	Tyr
510	acc	aaa	gat	tgg	tac	aag	aga	acc	gac	atg	gat	gta	ctt	tta	act
	Thr	Lys	Asp	Trp	Tyr	Lys	Arg	Thr	Asp	Met	Asp	Val	Leu	Leu	Thr
520	cca	atc	ata	ctc	tat	gct	agt	gaa	agg	ttg	att	agg	gca	ttc	agg
	Pro	Ile	Ile	Leu	Tyr	Ala	Ser	Glu	Arg	Leu	Ile	Arg	Ala	Phe	Arg
530	agc	att	aaa	gct	gtt	aag	att	ttg	aag	gtg	gca	gta	tat	cca	gga
	Ser	Ile	Lys	Ala	Val	Lys	Ile	Leu	Lys	Val	Ala	Val	Tyr	Pro	Gly
540	gtg	ttg	gca	ctt	cac	atg	tca	aaa	cca	cag	ggc	tac	aaa	tac	aaa
	Val	Leu	Ala	Leu	His	Met	Ser	Lys	Pro	Gln	Gly	Tyr	Lys	Tyr	Lys
550	ggg	caa	tac	atg	ttt	gtc	aac	tgt	gct	gca	gtt	tct	cca	ttt	gag
	Gly	Gln	Tyr	Met	Phe	Val	Asn	Cys	Ala	Ala	Val	Ser	Pro	Phe	Glu
560	cat	cca	ttt	tca	att	act	tcg	gcc	cca	gga	gat	gac	tat	ctc	agt
	His	Pro	Phe	Ser	Ile	Thr	Ser	Ala	Pro	Gly	Asp	Asp	Tyr	Leu	Ser
570	cat	att	cga	act	ctt	ggc	gat	tgg	acc	agg	caa	ctt	aaa	act	gtt
	His	Ile	Arg	Thr	Leu	Gly	Asp	Trp	Thr	Arg	Gln	Leu	Lys	Thr	Val
580	tcc	gag	gtt	tgc	cag	cca	cca	cct	aat	gga	aaa	agt	gga	ctc	ctc
	Ser	Glu	Val	Cys	Gln	Pro	Pro	Pro	Asn	Gly	Lys	Ser	Gly	Leu	Arg
590	gct	gac	tac	ttg	caa	gga	gag	aat	aat	cct	aat	ttc	cca	agg	gtg
	Ala	Asp	Tyr	Leu	Gln	Gly	Glu	Asn	Asn	Pro	Asn	Phe	Pro	Arg	Val
600	ata	gat	gga	cca	tat	gga	gca	cca	gca	caa	gac	tac	aag	aaa	tat
	Ile	Asp	Gly	Pro	Tyr	Gly	Ala	Pro	Ala	Gln	Asp	Tyr	Lys	Lys	Tyr
610	gtg	gtt	ttg	ttg	gta	ggc	ctt	gga	att	gga	gct	aca	cca	atg	atc
	Val	Val	Leu	Leu	Val	Gly	Leu	Gly	Ile	Gly	Ala	Thr	Pro	Met	Ile
620	att	gtt	aaa	gac	att	gtc	aac	aac	atg	aag	gca	atg	gac	gaa	gaa
	Ile	Val	Lys	Asp	Ile	Val	Asn	Asn	Met	Lys	Ala	Met	Asp	Glu	Glu

# Sequence Listing

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750          755          760          765
aat tcc ttg gaa gat gga cac aat aat aat atg gca cca aat tct agc 2655
Asn Ser Leu Glu Asp Gly His Asn Asn Asn Met Ala Pro Asn Ser Ser
770          775          780
ccc aat att gca aaa aat aag ggt aat aaa tca ggt tca gca agt gga 2703
Pro Asn Ile Ala Lys Asn Lys Gly Asn Lys Ser Gly Ser Ala Ser Gly
785          790          795
gga aat aat ttc aat aca agg aga gca tat ttc tat tgg gtt act aga 2751
Gly Asn Asn Phe Asn Thr Arg Arg Ala Tyr Phe Tyr Trp Val Thr Arg
800          805          810
gaa caa ggt tca ttt gat tgg ttc aaa ggt ata atg aat gaa gct gct 2799
Glu Gln Gly Ser Phe Asp Trp Phe Lys Gly Ile Met Asn Glu Ala Ala
815          820          825
gaa atg gac cat aag gga gta att gaa atg cat aat tat tgt act agt 2847
Glu Met Asp His Lys Gly Val Ile Glu Met His Asn Tyr Cys Thr Ser
830          835          840          845
gtt tat gaa gaa ggt gat gct cgt tct gct ctt att act atg ctt cag 2895
Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala Leu Ile Thr Met Leu Gln
850          855          860
tct ctt cac cat gcc aaa aat ggt gtt gac att gtc tct ggc acc aga 2943
Ser Leu His His Ala Lys Asn Gly Val Asp Ile Val Ser Gly Thr Arg
865          870          875
gtt aag tca cat ttt gct aaa cct aat tgg cgt aat gtc tac aaa cgc 2991
Val Lys Ser His Phe Ala Lys Pro Asn Trp Arg Asn Val Tyr Lys Arg
880          885          890          895
att gct ctc aac cac cct gag gct aaa gtt ggg gtc ttc tat tgt ggg 3039
Ile Ala Leu Asn His Pro Glu Ala Lys Val Gly Val Phe Tyr Cys Gly
900          905          910          915          920          925
gca cca gca ctg acc aaa gaa cta aga caa cac gcc ttg gat ttt tca 3087
Ala Pro Ala Leu Thr Lys Glu Leu Arg Gln His Ala Leu Asp Phe Ser
910          915          920          925          930          935
cac aag aca tct acc aag ttt gat ttc cat aaa gaa aat ttt 3129
His Lys Thr Ser Thr Lys Phe Asp Phe His Lys Glu Asn Phe
930          935
tgagcaaaga atagaccatt aagcagagca ttaaaatttc atcaaaacag ctaaggacac 3189
aggttgtttt atagaagtct accaactctc cctattgtgt acagataatg ttgcacttca 3249
agttgatata tagttgtggt tgtgatgcta gtatattaca aaataataag attattttta 3309
ttttagtagtaa aaaaaaaaaa aaaaaaaaaa 3338
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<213> Nicotiana tabacum
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20 25 30
Ser Gly Pro Leu Asn Lys Arg Gly Gly Lys Lys Ser Ala Arg Phe Asn
35 40 45
Ile Pro Glu Ser Thr Asp Ile Gly Thr Ser Val Gly Thr Gly Gly Lys
50 55 60
Ser Asn Asp Asp Ala Tyr Val Glu Ile Thr Leu Asp Val Arg Glu Asp
65 70 75 80
Ser Val Ala Val His Ser Val Lys Thr Ala Gly Gly Asp Asp Val Glu
85 90 95
Asp Pro Glu Leu Ala Leu Leu Ala Lys Gly Leu Glu Lys Lys Ser Thr
100 105 110
Leu Gly Ser Ser Leu Val Arg Asn Ala Ser Ser Arg Ile Arg Gln Val
115 120 125
Ser Gln Glu Leu Arg Arg Leu Ala Ser Leu Asn Lys Arg Pro Ile Pro
130 135 140
Thr Gly Arg Phe Asp Arg Asn Lys Ser Ala Ala His Ala Leu Lys
145 150 155 160

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# Sequence Listing

Gly	Leu	Lys	Phe	Ile	Ser	Lys	Thr	Asp	Gly	Gly	Ala	Gly	Trp	Ala	Ala
				165					170					175	
Val	Glu	Lys	Arg	Phe	Asp	Glu	Ile	Thr	Ala	Ser	Thr	Thr	Gly	Leu	Leu
			180					185					190		
Pro	Arg	Ala	Lys	Phe	Gly	Glu	Cys	Ile	Gly	Met	Asn	Lys	Glu	Ser	Lys
		195					200					205			
Glu	Phe	Ala	Val	Glu	Leu	Tyr	Asp	Ala	Leu	Ala	Arg	Arg	Arg	Asn	Ile
	210					215					220				
Thr	Thr	Asp	Ser	Ile	Asn	Lys	Ala	Gln	Leu	Lys	Glu	Phe	Trp	Asp	Gln
225					230					235					240
Val	Ala	Asp	Gln	Ser	Phe	Asp	Ser	Arg	Leu	Gln	Thr	Phe	Phe	Asp	Met
				245					250					255	
Val	Asp	Lys	Asp	Ala	Asp	Gly	Arg	Ile	Thr	Glu	Glu	Glu	Val	Arg	Glu
			260					265					270		
Ile	Ile	Gly	Leu	Ser	Ala	Ser	Ala	Asn	Arg	Leu	Ser	Thr	Ile	Gln	Lys
		275					280					285			
Gln	Ala	Asp	Glu	Tyr	Ala	Ala	Met	Ile	Met	Glu	Glu	Leu	Asp	Pro	Asn
	290					295					300				
Asn	Leu	Gly	Tyr	Ile	Met	Ile	Glu	Asn	Leu	Glu	Met	Leu	Leu	Leu	Gln
305					310					315					320
Ala	Pro	Asn	Gln	Ser	Val	Gln	Arg	Gly	Gly	Glu	Ser	Arg	Asn	Leu	Ser
				325					330					335	
Gln	Met	Leu	Ser	Gln	Lys	Leu	Lys	His	Thr	Gln	Glu	Arg	Asn	Pro	Ile
				340				345					350		
Val	Arg	Trp	Tyr	Lys	Ser	Phe	Met	Tyr	Phe	Leu	Leu	Asp	Asn	Trp	Gln
		355					360					365			
Arg	Val	Trp	Val	Leu	Leu	Leu	Trp	Ile	Gly	Ile	Met	Ala	Gly	Leu	Phe
	370					375					380				
Thr	Trp	Lys	Tyr	Ile	Gln	Tyr	Lys	Glu	Lys	Ala	Ala	Tyr	Lys	Val	Met
385					390					395					400
Gly	Pro	Cys	Val	Cys	Phe	Ala	Lys	Gly	Ala	Ala	Glu	Thr	Leu	Lys	Leu
				405					410					415	
Asn	Met	Ala	Ile	Ile	Leu	Phe	Pro	Val	Cys	Arg	Asn	Thr	Ile	Thr	Trp
			420					425					430		
Leu	Arg	Asn	Lys	Thr	Arg	Leu	Gly	Ala	Ala	Val	Pro	Phe	Asp	Asp	Asn
		435					440					445			
Leu	Asn	Phe	His	Lys	Val	Ile	Ala	Val	Ala	Ile	Ala	Leu	Gly	Val	Gly
	450					455					460				
Ile	His	Gly	Leu	Ser	His	Leu	Thr	Cys	Asp	Phe	Pro	Arg	Leu	Leu	Asn
465					470					475					480
Ala	Ser	Glu	Glu	Glu	Tyr	Glu	Pro	Met	Lys	Tyr	Tyr	Phe	Gly	Asp	Gln
				485					490					495	
Pro	Glu	Ser	Tyr	Trp	Trp	Phe	Ile	Lys	Gly	Val	Glu	Gly	Val	Thr	Gly
			500					505					510		
Ile	Ile	Met	Val	Val	Leu	Met	Ala	Ile	Ala	Phe	Thr	Leu	Ala	Thr	Pro
		515					520					525			
Trp	Phe	Arg	Arg	Asn	Arg	Val	Ser	Leu	Pro	Lys	Pro	Phe	His	Lys	Leu
	530					535					540				
Thr	Gly	Xaa	Asn	Ala	Phe	Trp	Tyr	Ser	His	His	Leu	Phe	Val	Ile	Val
545					550					555					560
Tyr	Thr	Leu	Phe	Ile	Val	His	Gly	Glu	Lys	Leu	Tyr	Ile	Thr	Lys	Asp
				565					570					575	
Trp	Tyr	Lys	Arg	Thr	Asp	Met	Asp	Val	Leu	Leu	Thr	Ile	Pro	Ile	Ile
			580					585					590		
Leu	Tyr	Ala	Ser	Glu	Arg	Leu	Ile	Arg	Ala	Phe	Arg	Ser	Ser	Ile	Lys
		595					600					605			
Ala	Val	Lys	Ile	Leu	Lys	Val	Ala	Val	Tyr	Pro	Gly	Asn	Val	Leu	Ala
	610					615					620				
Leu	His	Met	Ser	Lys	Pro	Gln	Gly	Tyr	Lys	Tyr	Lys	Ser	Gly	Gln	Tyr
625					630					635					640
Met	Phe	Val	Asn	Cys	Ala	Ala	Val	Ser	Pro	Phe	Glu	Trp	His	Pro	Phe
				645					650					655	
Ser	Ile	Thr	Ser	Ala	Pro	Gly	Asp	Asp	Tyr	Leu	Ser	Val	His	Ile	Arg

# Sequence Listing

660 Thr Leu Gly Asp Trp Thr Arg Gln 665 Leu Lys Thr Val Phe 670 Ser Glu Val  
 675 Cys Gln Pro Pro Pro Asn Gly Lys Ser Gly Leu Leu Arg Ala Asp Tyr  
 690 Leu Gln Gly Glu Asn Asn Pro Asn Phe Pro Arg Val Leu Ile Asp Gly  
 705 Pro Tyr Gly Ala Pro Ala Gln Asp Tyr Lys Lys Tyr Glu Val Val Leu  
 725 Leu Val Gly Leu Gly Ile Gly Ala Thr Pro Met Ile Ser Ile Val Lys  
 740 Asp Ile Val Asn Asn Met Lys Ala Met Asp Glu Glu Glu Asn Ser Leu  
 755 Glu Asp Gly His Asn Asn Asn Met Ala Pro Asn Ser Ser Pro Asn Ile  
 770 Ala Lys Asn Lys Gly Asn Lys Ser Gly Ser Ala Ser Gly Gly Asn Asn  
 785 Phe Asn Thr Arg Arg Ala Tyr Phe Tyr Trp Val Thr Arg Glu Gln Gly  
 805 Ser Phe Asp Trp Phe Lys Gly Ile Met Asn Glu Ala Ala Glu Met Asp  
 820 His Lys Gly Val Ile Glu Met His Asn Tyr Cys Thr Ser Val Tyr Glu  
 835 Glu Gly Asp Ala Arg Ser Ala Leu Ile Thr Met Leu Gln Ser Leu His  
 850 His Ala Lys Asn Gly Val Asp Ile Val Ser Gly Thr Arg Val Lys Ser  
 865 His Phe Ala Lys Pro Asn Trp Arg Asn Val Tyr Lys Arg Ile Ala Leu  
 885 Asn His Pro Glu Ala Lys Val Gly Val Phe Tyr Cys Gly Ala Pro Ala  
 900 Leu Thr Lys Glu Leu Arg Gln His Ala Leu Asp Phe Ser His Lys Thr  
 915 Ser Thr Lys Phe Asp Phe His Lys Glu Asn Phe  
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<210> 17

<211> 2532

<212> DNA

<213> Oryza sativa

<220>

<221> CDS

<222> (1)..(2529)

<223> coding for NADPH oxidase

<400> 17

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ggg ttg ccg agg ccg ccg ggg gcg ggg gcg ggt gcg gcg gcg ggc ggg	96
Gly Leu Pro Arg Pro Pro Gly Ala Gly Ala Ala Ala Gly Gly	
20 25 30	
ttc gcg cgg ggg ctg atg aag cag ccg tcg cgg ctg gcg tcc ggg gtg	144
Phe Ala Arg Gly Leu Met Lys Gln Pro Ser Arg Leu Ala Ser Gly Val	
35 40 45	
agg cag ttc gcg tcg agg gtg tcg atg aag gtg ccg gag ggg gtg ggg	192
Arg Gln Phe Ala Ser Arg Val Ser Met Lys Val Pro Glu Gly Val Gly	
50 55 60	
ggg atg cgg ccc ggt ggc ggg agg atg acg cgg atg cag tcc agc gcg	240
Gly Met Arg Pro Gly Gly Gly Arg Met Thr Arg Met Gln Ser Ser Ala	
65 70 75 80	
cag gtg ggg ctc cgg ggg ctc cgc ttc ctc gac aag acg tcc ggc ggg	288
Gln Val Gly Leu Arg Gly Leu Arg Phe Leu Asp Lys Thr Ser Gly Gly	
85 90 95	

# Sequence Listing

aag	gag	ggg	tgg	aag	tcc	gtc	gag	cgc	cgc	ttc	gac	gag	atg	aac	cgc	336
Lys	Glu	Gly	Trp	Lys	Ser	Val	Glu	Arg	Arg	Phe	Asp	Glu	Met	Asn	Arg	
			100					105					110			
aac	ggc	cgc	ctc	ccc	aag	gag	agc	ttc	ggc	aag	tgc	atc	ggc	atg	ggg	384
Asn	Gly	Arg	Leu	Pro	Lys	Glu	Ser	Phe	Gly	Lys	Cys	Ile	Gly	Met	Gly	
		115					120					125				
gac	tcc	aag	gag	ttc	gcc	ggc	gag	ctg	ttc	gtg	gcg	ctg	gcg	cgg	cgg	432
Asp	Ser	Lys	Glu	Phe	Ala	Gly	Glu	Leu	Phe	Val	Ala	Leu	Ala	Arg	Arg	
		130				135					140					
agg	aac	ctg	gag	ccg	gag	gac	ggc	atc	acc	aag	gag	cag	ctc	aag	gag	480
Arg	Asn	Leu	Glu	Pro	Glu	Asp	Gly	Ile	Thr	Lys	Glu	Gln	Leu	Lys	Glu	
					150			155							160	
ttc	tgg	gag	gag	atg	acc	gac	cag	aac	ttc	gac	tcg	cgg	ctt	cgc	att	528
Phe	Trp	Glu	Glu	Met	Thr	Asp	Gln	Asn	Phe	Asp	Ser	Arg	Leu	Arg	Ile	
				165				170						175		
ttc	ttt	gac	atg	tgc	gac	aag	aat	ggc	gat	ggg	atg	ctc	acg	gaa	gat	576
Phe	Phe	Asp	Met	Cys	Asp	Lys	Asn	Gly	Asp	Gly	Met	Leu	Thr	Glu	Asp	
			180					185					190			
gag	gtc	aag	gag	gtt	att	ata	ctg	agt	gcg	tcg	gcg	aac	aag	ctg	gcg	624
Glu	Val	Lys	Glu	Val	Ile	Ile	Leu	Ser	Ala	Ser	Ala	Asn	Lys	Leu	Ala	
		195					200					205				
aag	ctg	aag	gga	cac	gcg	gcg	acg	tac	gcg	tcg	ctg	atc	atg	gag	gag	672
Lys	Leu	Lys	Gly	His	Ala	Ala	Thr	Tyr	Ala	Ser	Leu	Ile	Met	Glu	Glu	
		210			215						220					
ctg	gac	ccg	gac	gac	gcg	ggg	tac	atc	gag	atc	tgg	cag	ctg	gag	acg	720
Leu	Asp	Pro	Asp	Asp	Arg	Gly	Tyr	Ile	Glu	Ile	Trp	Gln	Leu	Glu	Thr	
		225			230				235						240	
ctg	ctg	cgc	ggc	atg	gtg	agc	gcg	cag	gcg	gcg	ccg	gag	aag	atg	aag	768
Leu	Leu	Arg	Gly	Met	Val	Ser	Ala	Gln	Ala	Ala	Pro	Glu	Lys	Met	Lys	
			245					250						255		
cgg	acg	acg	tcg	agc	ctc	gcg	agg	acg	atg	atc	ccg	tcg	cgg	tac	cgg	816
Arg	Thr	Thr	Ser	Ser	Leu	Ala	Arg	Thr	Met	Ile	Pro	Ser	Arg	Tyr	Arg	
			260					265					270			
agc	ccg	ctg	aag	cgg	cac	gtg	tcc	agg	acg	gtg	gac	ttc	gtg	cac	gag	864
Ser	Pro	Leu	Lys	Arg	His	Val	Ser	Arg	Thr	Val	Asp	Phe	Val	His	Glu	
		275					280					285				
aac	tgg	aag	cgg	atc	tgg	ctc	gtc	gcg	ctg	tgg	ctc	gcc	gtc	aac	gtc	912
Asn	Trp	Lys	Arg	Ile	Trp	Leu	Val	Ala	Leu	Trp	Leu	Ala	Val	Asn	Val	
		290				295					300					
ggc	ctc	ttc	gcc	tac	aag	ttc	gag	cag	tac	gag	cgg	cgc	gcc	gcg	ttc	960
Gly	Leu	Phe	Ala	Tyr	Lys	Phe	Glu	Gln	Tyr	Glu	Arg	Arg	Ala	Ala	Phe	
		305			310				315						320	
cag	gtg	atg	ggc	cac	tgc	gtg	tgc	gtg	gcc	aag	ggc	gcc	gcc	gag	gtg	1008
Gln	Val	Met	Gly	His	Cys	Val	Cys	Val	Ala	Lys	Gly	Ala	Ala	Glu	Val	
			325					330						335		
ctc	aag	ctc	aac	atg	gcg	ctc	atc	ctc	ctc	ccc	gtg	tgc	cgg	aac	acg	1056
Leu	Lys	Leu	Asn	Met	Ala	Leu	Ile	Leu	Leu	Pro	Val	Cys	Arg	Asn	Thr	
			340					345					350			
ctc	acc	acg	ctc	agg	tcc	acg	gcg	ctc	agc	cac	gtc	atc	ccc	ttc	gac	1104
Leu	Thr	Thr	Leu	Arg	Ser	Thr	Ala	Leu	Ser	His	Val	Ile	Pro	Phe	Asp	
		355					360					365				
gac	aac	atc	aac	ttc	cac	aag	gtg	atc	gcg	gcg	acc	atc	gcc	gcc	gcc	1152
Asp	Asn	Ile	Asn	Phe	His	Lys	Val	Ile	Ala	Ala	Thr	Ile	Ala	Ala	Ala	
		370				375					380					
acc	gcc	gtc	cac	acg	ctg	gcg	cac	gtc	acc	tgc	gac	ttc	ccg	agg	ctg	1200
Thr	Ala	Val	His	Thr	Leu	Ala	His	Val	Thr	Cys	Asp	Phe	Pro	Arg	Leu	
		385			390					395					400	
atc	aac	tgc	ccc	agc	gac	aag	ttc	atg	gcg	acg	ctg	ggg	ccg	aac	ttc	1248
Ile	Asn	Cys	Pro	Ser	Asp	Lys	Phe	Met	Ala	Thr	Leu	Gly	Pro	Asn	Phe	
				405				410						415		
ggg	tac	agg	cag	ccg	acg	tac	gcc	gac	ctg	ctg	gag	agc	gcc	ccc	ggc	1296
Gly	Tyr	Arg	Gln	Pro	Thr	Tyr	Ala	Asp	Leu	Leu	Glu	Ser	Ala	Pro	Gly	
			420					425					430			

# Sequence Listing

gtc	acc	ggc	atc	ctc	atg	atc	atc	atc	atg	tcc	ttc	tcc	ttc	acg	ctg	1344
Val	Thr	Gly	Ile	Leu	Met	Ile	Ile	Ile	Met	Ser	Phe	Ser	Phe	Thr	Leu	
		435					440				445					
gcc	acg	cac	tcc	ttc	cgc	cgg	agc	gtc	gtc	aag	ctg	ccg	tcg	ccg	ctg	1392
Ala	Thr	His	Ser	Phe	Arg	Arg	Ser	Val	Val	Lys	Leu	Pro	Ser	Pro	Leu	
	450					455					460					
cac	cac	ctc	gcc	ggc	ttc	aac	gcc	ttc	tgg	tac	gcg	cac	cac	ctc	ctg	1440
His	His	Leu	Ala	Gly	Phe	Asn	Ala	Phe	Trp	Tyr	Ala	His	His	Leu	Leu	
	465				470				475						480	
gtg	ctc	gcc	tac	gtc	ctc	ctc	gtc	gtg	cac	tcc	tac	ttc	ata	ttc	ctc	1488
Val	Leu	Ala	Tyr	Val	Leu	Leu	Val	Val	His	Ser	Tyr	Phe	Ile	Phe	Leu	
				485					490					495		
acc	agg	gag	tgg	tac	aag	aaa	acg	aca	tgg	atg	tac	ctg	ata	gtc	cca	1536
Thr	Arg	Glu	Trp	Tyr	Lys	Lys	Thr	Thr	Trp	Met	Tyr	Leu	Ile	Val	Pro	
		500						505					510			
gtg	ctc	ttc	tat	gca	tgc	gag	aga	acg	atc	aga	aaa	gtt	cga	gag	aac	1584
Val	Leu	Phe	Tyr	Ala	Cys	Glu	Arg	Thr	Ile	Arg	Lys	Val	Arg	Glu	Asn	
		515					520					525				
aac	tac	cgc	gtg	agc	atc	gtc	aag	gca	gcg	att	tac	cca	gga	aat	gtg	1632
Asn	Tyr	Arg	Val	Ser	Ile	Val	Lys	Ala	Ala	Ile	Tyr	Pro	Gly	Asn	Val	
	530					535					540					
ctc	tct	ctt	cac	atg	aag	aag	ccg	ccg	ggt	ttc	aag	tac	aag	agc	ggg	1680
Leu	Ser	Leu	His	Met	Lys	Lys	Pro	Pro	Gly	Phe	Lys	Tyr	Lys	Ser	Gly	
				545	550				555						560	
atg	tac	ctg	ttt	gtg	aag	tgc	cct	gat	gtc	tct	cct	ttc	gaa	tgg	cat	1728
Met	Tyr	Leu	Phe	Val	Lys	Cys	Pro	Asp	Val	Ser	Pro	Phe	Glu	Trp	His	
				565					570					575		
ccc	ttc	tcc	atc	act	tct	gca	cct	gga	gat	gac	tac	ctg	agt	gtg	cat	1776
Pro	Phe	Ser	Ile	Thr	Ser	Ala	Pro	Gly	Asp	Asp	Tyr	Leu	Ser	Val	His	
			580					585					590			
atc	cgt	aca	cta	ggt	gac	tgg	acg	act	gaa	ctc	aga	aac	ctg	ttt	ggg	1824
Ile	Arg	Thr	Leu	Gly	Asp	Trp	Thr	Thr	Glu	Leu	Arg	Asn	Leu	Phe	Gly	
		595					600					605				
aag	gct	tgc	gag	gca	cag	gtt	act	tct	aag	aag	gct	acc	ctt	tca	aga	1872
Lys	Ala	Cys	Glu	Ala	Gln	Val	Thr	Ser	Lys	Lys	Ala	Thr	Leu	Ser	Arg	
	610					615					620					
ctt	gaa	act	aca	gtt	gtg	gcg	gac	gct	cag	aca	gag	gat	act	agg	ttt	1920
Leu	Glu	Thr	Thr	Val	Val	Ala	Asp	Ala	Gln	Thr	Glu	Asp	Thr	Arg	Phe	
	625				630				635						640	
cct	aag	gtc	ctt	att	gat	ggg	ccc	tat	ggt	gca	ccg	gcg	caa	aac	tac	1968
Pro	Lys	Val	Leu	Ile	Asp	Gly	Pro	Tyr	Gly	Ala	Pro	Ala	Gln	Asn	Tyr	
				645					650					655		
aag	aag	tat	gac	att	ctt	ttg	ctt	att	ggt	ctt	gga	att	ggt	gct	act	2016
Lys	Lys	Tyr	Asp	Ile	Leu	Leu	Leu	Ile	Gly	Leu	Gly	Ile	Gly	Ala	Thr	
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cct	ttc	atc	agc	att	ctg	aag	gat	ctg	ttg	aac	aac	att	aaa	tcc	aac	2064
Pro	Phe	Ile	Ser	Ile	Leu	Lys	Asp	Leu	Leu	Asn	Asn	Ile	Lys	Ser	Asn	
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Glu	Glu	Val	Glu	Ser	Ile	His	Gly	Ser	Glu	Ile	Gly	Ser	Phe	Lys	Asn	
	690					695					700					
aat	ggg	cca	gga	aga	gct	tac	ttc	tac	tgg	gtg	acc	aga	gag	caa	ggg	2160
Asn	Gly	Pro	Gly	Arg	Ala	Tyr	Phe	Tyr	Trp	Val	Thr	Arg	Glu	Gln	Gly	
	705				710				715						720	
tcc	ttc	gag	tgg	ttt	aaa	gga	gtc	atg	aac	gat	gtc	gct	gaa	agt	gat	2208
Ser	Phe	Glu	Trp	Phe	Lys	Gly	Val	Met	Asn	Asp	Val	Ala	Glu	Ser	Asp	
				725					730					735		
cac	aat	aat	att	ata	gag	atg	cac	aat	tac	ctg	acc	agc	gtg	tat	gaa	2256
His	Asn	Asn	Ile	Ile	Glu	Met	His	Asn	Tyr	Leu	Thr	Ser	Val	Tyr	Glu	
			740					745					750			
gaa	ggc	gac	gca	agg	tca	gct	ttg	att	gcc	atg	gtt	cag	tca	ctt	caa	2304
Glu	Gly	Asp	Ala	Arg	Ser	Ala	Leu	Ile	Ala	Met	Val	Gln	Ser	Leu	Gln	
		755					760					765				

# Sequence Listing

cat gcc aaa aat ggt gtg gat atc gtc tcc ggc agc agg att cgc aca	2352
His Ala Lys Asn Gly Val Asp Ile Val Ser Gly Ser Arg Ile Arg Thr	
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His Phe Ala Arg Pro Asn Trp Arg Lys Val Phe Ser Asp Leu Ala Asn	
785 790 795 800	
gcc cac aaa aac tca cgc ata ggt gtt ttc tat tgt gga tcc cct aca	2448
Ala His Lys Asn Ser Arg Ile Gly Val Phe Tyr Cys Gly Ser Pro Thr	
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ctc acg aaa caa ctc aag gat ctt tca aaa gaa ttc agc cag aca acc	2496
Leu Thr Lys Gln Leu Lys Asp Leu Ser Lys Glu Phe Ser Gln Thr Thr	
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aca act aga ttc cac ttc cac aag gaa aac ttt taa	2532
Thr Thr Arg Phe His Phe His Lys Glu Asn Phe	
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<211> 843

<212> PRT

<213> Oryza sativa

<400> 18

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Arg Gln Phe Ala Ser Arg Val Ser Met Lys Val Pro Glu Gly Val Gly	
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Gln Val Gly Leu Arg Gly Leu Arg Phe Leu Asp Lys Thr Ser Gly Gly	
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115 120 125	
Asp Ser Lys Glu Phe Ala Gly Glu Leu Phe Val Ala Leu Ala Arg Arg	
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Arg Asn Leu Glu Pro Glu Asp Gly Ile Thr Lys Glu Gln Leu Lys Glu	
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Phe Trp Glu Glu Met Thr Asp Gln Asn Phe Asp Ser Arg Leu Arg Ile	
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Phe Phe Asp Met Cys Asp Lys Asn Gly Asp Gly Met Leu Thr Glu Asp	
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Glu Val Lys Glu Val Ile Ile Leu Ser Ala Ser Ala Asn Lys Leu Ala	
195 200 205	
Lys Leu Lys Gly His Ala Ala Thr Tyr Ala Ser Leu Ile Met Glu Glu	
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245 250 255	
Arg Thr Thr Ser Ser Leu Ala Arg Thr Met Ile Pro Ser Arg Tyr Arg	
260 265 270	
Ser Pro Leu Lys Arg His Val Ser Arg Thr Val Asp Phe Val His Glu	
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Gly Leu Phe Ala Tyr Lys Phe Glu Gln Tyr Glu Arg Arg Ala Ala Phe	
305 310 315 320	
Gln Val Met Gly His Cys Val Cys Val Ala Lys Gly Ala Ala Glu Val	
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# Sequence Listing

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Thr	Ala	Val	370	His	Thr	Leu	Ala	His	375	Val	Thr	Cys	Asp	Phe	380	Pro	Arg	Leu
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Gly	Tyr	Arg	Gln	Pro	Thr	Tyr	Ala	Asp	405	Leu	Leu	Glu	Ser	Ala	415	Pro	Gly	
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Ala	Thr	His	Ser	Phe	Arg	Arg	Ser	Val	435	Val	Val	Lys	Leu	Pro	440	Ser	Pro	Leu
His	His	Leu	Ala	Gly	Phe	Asn	Ala	Phe	445	Trp	Tyr	Ala	His	His	450	Leu	Leu	
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Val	Leu	Phe	Tyr	Ala	Cys	Glu	Arg	Thr	485	Ile	Arg	Lys	Val	Arg	490	Glu	Asn	
Asn	Tyr	Arg	Val	Ser	Ile	Val	Lys	Ala	500	Ala	Ile	Tyr	Pro	Gly	505	Asn	Val	
Leu	Ser	Leu	His	Met	Lys	Lys	Pro	Pro	515	Gly	Phe	Lys	Tyr	Lys	520	Ser	Gly	
545	Met	Tyr	Leu	Phe	Val	Lys	Cys	Pro	525	Val	Ser	Pro	Phe	Glu	530	Trp	His	
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Lys	Ala	Cys	Glu	Ala	Gln	Val	Thr	Ser	555	Lys	Lys	Ala	Thr	Leu	560	Ser	Arg	
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Lys	Lys	Tyr	Asp	Ile	Leu	Leu	Leu	Ile	585	Gly	Leu	Gly	Ile	Gly	590	Ala	Thr	
Pro	Phe	Ile	Ser	Ile	Leu	Lys	Asp	Leu	600	Leu	Leu	Asn	Asn	Ile	605	Lys	Ser	
Glu	Glu	Val	Glu	Ser	Ile	His	Gly	Ser	610	Glu	Ile	Gly	Ser	Phe	615	Lys	Asn	
Asn	Gly	Pro	Gly	Arg	Ala	Tyr	Phe	Tyr	620	Thr	Arg	Glu	Gln	Gly	625	Thr	Arg	
705	Ser	Phe	Glu	Trp	Phe	Lys	Gly	Val	630	Met	Asn	Asp	Val	Ala	635	Glu	Ser	
His	Asn	Asn	Ile	Ile	Glu	Met	His	Asn	640	Tyr	Leu	Thr	Ser	Val	645	Tyr	Glu	
Glu	Gly	Asp	Ala	Arg	Ser	Ala	Leu	Ile	650	Ala	Met	Val	Gln	Ser	655	Leu	Gln	
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His	Phe	Ala	Arg	Pro	Asn	Trp	Arg	Lys	670	Val	Phe	Ser	Asp	Leu	675	Ala	Asn	
785	Ala	His	Lys	Asn	Ser	Arg	Ile	Gly	680	Val	Phe	Tyr	Cys	Gly	685	Pro	Thr	
Leu	Thr	Lys	Gln	Leu	Lys	Asp	Leu	Ser	690	Lys	Glu	Phe	Ser	Gln	695	Thr	Thr	
Thr	Thr	Arg	Phe	His	Phe	His	Lys	Glu	700	Asn	Phe				705			
									710						715			
									720						725			
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Glu Ala Gly Asn Ser Gly Pro Met Ser Gly Gly Gln Leu Pro Pro Ile	
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tat aaa aaa ccg ggg aac tcc aga ttc act gct gag aac agt cag aga	144
Tyr Lys Lys Pro Gly Asn Ser Arg Phe Thr Ala Glu Asn Ser Gln Arg	
35 40 45	
aca cgt acg gca cca tac gtg gac ctc acg gta gat gta caa gac gat	192
Thr Arg Thr Ala Pro Tyr Val Asp Leu Thr Val Val Gln Asp Asp	
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aca gtc tct gta cat agc ttg aaa atg gaa ggt gga tct agc gtt gaa	240
Thr Val Ser Val His Ser Leu Lys Met Glu Gly Gly Ser Ser Val Glu	
65 70 75 80	
gag agt ccg gag ctt act ttg ctg aaa cga aac cgt ctt gag aag aaa	288
Glu Ser Pro Glu Leu Thr Leu Leu Lys Arg Asn Arg Leu Glu Lys Lys	
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aca acg gtg gtg aaa cgt ttg gcg tct gtt tct cac gag ctt aag cgt	336
Thr Thr Val Val Lys Arg Leu Ala Ser Val Ser His Glu Leu Lys Arg	
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Leu Thr Ser Val Ser Gly Gly Ile Gly Gly Arg Lys Pro Pro Arg Pro	
115 120 125	
gct aag tta gac cgg act aaa tcc gcc gcg agt caa gcg ttg aag gga	432
Ala Lys Leu Asp Arg Thr Lys Ser Ala Ala Ser Gln Ala Leu Lys Gly	
130 135 140	
ctt aag ttc att agt aaa acc gac ggt ggc gcc ggt tgg tct gcc gtg	480
Leu Lys Phe Ile Ser Lys Thr Asp Gly Gly Ala Gly Trp Ser Ala Val	
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Glu Lys Arg Phe Asn Gln Ile Thr Ala Thr Thr Gly Gly Leu Leu Leu	
165 170 175	
cgg aca aag ttc ggt gaa tgc ata gga atg act tca aag gat ttt gct	576
Arg Thr Lys Phe Gly Glu Cys Ile Gly Met Thr Ser Lys Asp Phe Ala	
180 185 190	
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Leu Glu Leu Phe Asp Ala Leu Ala Arg Arg Arg Asn Ile Thr Gly Glu	
195 200 205	
gtg att gat gga gat caa cta aag gag ttt tgg gaa caa att aat gat	672
Val Ile Asp Gly Asp Gln Leu Lys Glu Phe Trp Glu Gln Ile Asn Asp	
210 215 220	
caa agt ttt gat tct cgg ctt aag aca ttc ttt gac atg gtg gat aaa	720
Gln Ser Phe Asp Ser Arg Leu Lys Thr Phe Phe Asp Met Val Asp Lys	
225 230 235 240	
gat gct gat ggt aga ctt aca gaa gac gaa gtt aga gag ttg gag agt	768
Asp Ala Asp Gly Arg Leu Thr Glu Asp Glu Val Arg Glu Leu Glu Ser	
245 250 255	
ctt gag act ctg ctt ttg caa gcg gca aca cag tct gtg ata aca agt	816
Leu Glu Thr Leu Leu Leu Gln Ala Ala Thr Gln Ser Val Ile Thr Ser	
260 265 270	
act ggg gag aga aag aat ctg agt cat atg atg agt cag agg ctt aag	864
Thr Gly Glu Arg Lys Asn Leu Ser His Met Met Ser Gln Arg Leu Lys	

# Sequence Listing

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	290						295							300					
ttc	ttc	ttg	tta	gac	aac	tgg	caa	aga	tgt	tgg	ggt	ata	gtg	cta	tgg				960
Phe	Phe	Leu	Leu	Asp	Asn	Trp	Gln	Arg	Cys	Trp	Val	Ile	Val	Leu	Trp				
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ttc	ata	ggt	atg	gct	ata	ctc	ttc	acc	tac	aaa	tat	atc	caa	tac	agg				1008
Phe	Ile	Val	Met	Ala	Ile	Leu	Phe	Thr	Tyr	Lys	Tyr	Ile	Gln	Tyr	Arg				
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cgt	agc	cct	gtg	tat	cca	gtg	atg	ggg	gat	tgt	gtg	tgc	atg	gct	aaa				1056
Arg	Ser	Pro	Val	Tyr	Pro	Val	Met	Gly	Asp	Cys	Val	Cys	Met	Ala	Lys				
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Gly	Ala	Ala	Glu	Thr	Val	Lys	Leu	Asn	Met	Ala	Leu	Ile	Leu	Leu	Pro				
		355					360						365						
ggt	tgt	aga	aac	acc	atc	aca	tgg	ctt	aga	aat	aag	acc	agg	ttg	ggg				1152
Val	Cys	Arg	Asn	Thr	Ile	Thr	Trp	Leu	Arg	Asn	Lys	Thr	Arg	Leu	Gly				
370					375						380								
cgt	ggt	gtc	cca	ttt	gat	gac	aat	ctc	aac	ttc	cac	aag	ggt	ata	gcg				1200
Arg	Val	Val	Pro	Phe	Asp	Asn	Leu	Asn	Phe	His	Lys	Val	Ile	Ala					
385					390				395					400					
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Val	Gly	Ile	Ile	Val	Gly	Val	Thr	Met	His	Ala	Gly	Ala	His	Leu	Ala				
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tgt	gat	ttc	ccg	cgg	tta	cta	cat	gca	act	cca	gag	gca	tat	agg	cct				1296
Cys	Asp	Phe	Pro	Arg	Leu	Leu	His	Ala	Thr	Pro	Glu	Ala	Tyr	Arg	Pro				
			420					425					430						
tta	aga	cag	ttt	ttt	ggg	gat	gag	caa	cca	aag	agc	tac	tgg	cat	ttt				1344
Leu	Arg	Gln	Phe	Phe	Gly	Asp	Glu	Gln	Pro	Lys	Ser	Tyr	Trp	His	Phe				
		435				440						445							
gta	aac	tcg	gta	gaa	ggt	ata	acc	gga	ctt	gtg	atg	ggt	ttg	tta	atg				1392
Val	Asn	Ser	Val	Glu	Gly	Ile	Thr	Gly	Leu	Val	Met	Val	Leu	Leu	Met				
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gcg	att	gca	ttc	aca	cta	gcc	acg	cct	tgg	ttc	aga	aga	ggg	aag	cta				1440
Ala	Ile	Ala	Phe	Thr	Leu	Ala	Thr	Pro	Trp	Phe	Arg	Arg	Gly	Lys	Leu				
465					470				475					480					
aac	tat	ctt	cca	gga	cca	tta	aag	aaa	cta	gct	agc	ttc	aat	gcc	ttc				1488
Asn	Tyr	Leu	Pro	Gly	Pro	Leu	Lys	Lys	Leu	Ala	Ser	Phe	Asn	Ala	Phe				
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tgg	tac	act	cat	cat	ttg	ttt	gtc	ata	gtc	tac	att	ctt	ctt	ggt	gct				1536
Trp	Tyr	Thr	His	His	Leu	Phe	Val	Ile	Val	Tyr	Ile	Leu	Leu	Val	Ala				
				500				505						510					
cat	gga	tac	tac	ttg	tat	ctc	acc	aga	gac	tgg	cac	aat	aaa	acg	act				1584
His	Gly	Tyr	Tyr	Leu	Tyr	Leu	Thr	Arg	Asp	Trp	His	Asn	Lys	Thr	Thr				
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Trp	Met	Tyr	Leu	Val	Val	Pro	Val	Val	Leu	Tyr	Ala	Cys	Glu	Arg	Leu				
		530				535					540								
ata	aga	gca	ttc	agg	tcg	agc	atc	aag	gcg	gtg	act	att	agg	aaa	gta				1680
Ile	Arg	Ala	Phe	Arg	Ser	Ile	Lys	Lys	Ala	Val	Thr	Ile	Arg	Lys	Val				
545					550				555					560					
gca	ggt	tat	cca	gga	aac	gtg	ctg	gca	att	cac	ttg	tca	agg	cct	caa				1728
Ala	Val	Tyr	Pro	Gly	Asn	Val	Leu	Ala	Ile	His	Leu	Ser	Arg	Pro	Gln				
				565				570						575					
aac	ttc	aaa	tac	aag	agt	ggg	caa	tac	atg	ttt	ggt	aac	tgt	gct	gct				1776
Asn	Phe	Lys	Tyr	Lys	Ser	Gly	Gln	Tyr	Met	Phe	Val	Asn	Cys	Ala	Ala				
			580				585					590							
ggt	tct	cca	ttt	gaa	tgg	cat	cca	ttt	tca	atc	aca	tct	gca	cca	caa				1824
Val	Ser	Pro	Phe	Glu	Trp	His	Pro	Phe	Ser	Ile	Thr	Ser	Ala	Pro	Gln				
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gat	gat	tac	cta	agt	ggt	cac	att	aga	ggt	ctt	ggg	gat	tgg	aca	cga				1872
Asp	Asp	Tyr	Leu	Ser	Val	His	Ile	Arg	Val	Leu	Gly	Asp	Trp	Thr	Arg				

## Sequence Listing

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gct ctc aaa gga gtc ttc tct gag gtg tgt aag cca cca ccg gca gga 1920
Ala Leu Lys Gly Val Phe Ser Glu Val Cys Lys Pro Pro Pro Ala Gly
625          630          635          640
gtt agt ggt ctg ctt aga gcc gac atg ttg cat ggt gca aat aat ccc 1968
Val Ser Gly Leu Leu Arg Ala Asp Met Leu His Gly Ala Asn Asn Pro
645          650          655          660
gac ttc ccg aaa gtc ttg att gat ggt cca tat ggt gca cca gca caa 2016
Asp Phe Pro Lys Val Leu Ile Asp Gly Pro Tyr Gly Ala Pro Ala Gln
665          670          675          680
gac tac aag aag tac gag gtg gtt cta cta gtt ggt ctc ggg att gga 2064
Asp Tyr Lys Lys Tyr Glu Val Val Leu Leu Val Gly Leu Gly Ile Gly
685          690          695          700
gcc aca cca atg atc agt atc gtc aaa gac att gtt aat aac atc aag 2112
Ala Thr Pro Met Ile Ser Ile Val Lys Asp Ile Val Asn Asn Ile Lys
705          710          715          720
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Pro Gln Arg Ser Lys Glu Ser Phe Arg Thr Arg Arg Ala Tyr Phe
745          750          755          760
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Tyr Trp Val Thr Arg Glu Gln Gly Ser Phe Asp Trp Phe Lys Asn Ile
765          770          775          780
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Met Asn Glu Val Ala Glu Arg Asp Ala Asn Arg Val Ile Glu Met His
785          790          795          800
aac tat tgt aca agt gtc tat gaa gaa ggt gac gct cgt tcc gca ctt 2352
Asn Tyr Cys Thr Ser Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala Leu
805          810          815          820
ata cat atg ctt caa tca cta aac cat gca aag aac ggc gtc gac att 2400
Ile His Met Leu Gln Ser Leu Asn His Ala Lys Asn Gly Val Asp Ile
825          830          835          840
gtc tct gga aca aga gtt atg tcc cat ttc gct aaa cct aat tgg aga 2448
Val Ser Gly Thr Arg Val Met Ser His Phe Ala Lys Pro Asn Trp Arg
845          850          855          860
aat gtt tac aag cgt ata gct atg gat cat cct aac acc aaa gtt gga 2496
Asn Val Tyr Lys Arg Ile Ala Met Asp His Pro Asn Thr Lys Val Gly
865          870          875          880
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Val Phe Tyr Cys Gly Ala Pro Ala Leu Thr Lys Glu Leu Arg His Leu
885          890          895          900
gct tta gat ttc acc cac aaa aca agc acc aga ttc tcc ttc cac aaa 2592
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Glu Asn Phe
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Thr Val Ser Val His Ser Leu Lys Met Glu Gly Gly Ser Ser Val Glu

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# Sequence Listing

65	Glu	Ser	Pro	Glu	Leu	Thr	Leu	Leu	Lys	Arg	Asn	Arg	Leu	Glu	Lys	Lys
	Thr	Thr	Val	Val	Lys	Arg	Leu	Ala	Ser	Val	Ser	His	Glu	Leu	Lys	Arg
	Leu	Thr	Ser	Val	Ser	Gly	Gly	Ile	Gly	Gly	Arg	Lys	Pro	Pro	Arg	Pro
	Ala	Lys	Leu	Asp	Arg	Thr	Lys	Ser	Ala	Ala	Ser	Gln	Ala	Leu	Lys	Gly
	Leu	Lys	Phe	Ile	Ser	Lys	Thr	Asp	Gly	Gly	Ala	Gly	Trp	Ser	Ala	Val
	Glu	Lys	Arg	Phe	Asn	Gln	Ile	Thr	Ala	Thr	Thr	Gly	Gly	Leu	Leu	Leu
	Arg	Thr	Lys	Phe	Gly	Glu	Cys	Ile	Gly	Met	Thr	Ser	Lys	Asp	Phe	Ala
	Leu	Glu	Leu	Phe	Asp	Ala	Leu	Ala	Arg	Arg	Arg	Asn	Ile	Thr	Gly	Glu
	Val	Ile	Asp	Gly	Asp	Gln	Leu	Lys	Glu	Phe	Trp	Glu	Gln	Ile	Asn	Asp
	Gln	Ser	Phe	Asp	Ser	Arg	Leu	Lys	Thr	Phe	Phe	Asp	Met	Val	Asp	Lys
	Asp	Ala	Asp	Gly	Arg	Leu	Thr	Glu	Asp	Glu	Val	Arg	Glu	Leu	Glu	Ser
	Leu	Glu	Thr	Leu	Leu	Leu	Gln	Ala	Ala	Thr	Gln	Ser	Val	Ile	Thr	Ser
	Thr	Gly	Glu	Arg	Lys	Asn	Leu	Ser	His	Met	Met	Ser	Gln	Arg	Leu	Lys
	Pro	Thr	Phe	Asn	Arg	Asn	Pro	Leu	Lys	Arg	Trp	Tyr	Arg	Gly	Leu	Arg
	Phe	Phe	Leu	Leu	Asp	Asn	Trp	Gln	Arg	Cys	Trp	Val	Ile	Val	Leu	Trp
	Phe	Ile	Val	Met	Ala	Ile	Leu	Phe	Thr	Tyr	Lys	Tyr	Ile	Gln	Tyr	Arg
	Arg	Ser	Pro	Val	Tyr	Pro	Val	Met	Gly	Asp	Cys	Val	Cys	Met	Ala	Lys
	Gly	Ala	Ala	Glu	Thr	Val	Lys	Leu	Asn	Met	Ala	Leu	Ile	Leu	Leu	Pro
	Val	Cys	Arg	Asn	Thr	Ile	Thr	Trp	Leu	Arg	Asn	Lys	Thr	Arg	Leu	Gly
	Arg	Val	Val	Pro	Phe	Asp	Asn	Leu	Asn	Phe	His	Lys	Val	Ile	Ala	
	Val	Gly	Ile	Ile	Val	Gly	Val	Thr	Met	His	Ala	Gly	Ala	His	Leu	Ala
	Cys	Asp	Phe	Pro	Arg	Leu	Leu	His	Ala	Thr	Pro	Glu	Ala	Tyr	Arg	Pro
	Leu	Arg	Gln	Phe	Phe	Gly	Asp	Glu	Gln	Pro	Lys	Ser	Tyr	Trp	His	Phe
	Val	Asn	Ser	Val	Glu	Gly	Ile	Thr	Gly	Leu	Val	Met	Val	Leu	Leu	Met
	Ala	Ile	Ala	Phe	Thr	Leu	Ala	Thr	Pro	Trp	Phe	Arg	Arg	Gly	Lys	Leu
	Asn	Tyr	Leu	Pro	Gly	Pro	Leu	Lys	Lys	Leu	Ala	Ser	Phe	Asn	Ala	Phe
	Trp	Tyr	Thr	His	His	Leu	Phe	Val	Ile	Val	Tyr	Ile	Leu	Leu	Val	Ala
	His	Gly	Tyr	Tyr	Leu	Tyr	Leu	Thr	Arg	Asp	Trp	His	Asn	Lys	Thr	Thr
	Trp	Met	Tyr	Leu	Val	Val	Pro	Val	Val	Leu	Tyr	Ala	Cys	Glu	Arg	Leu
	Ile	Arg	Ala	Phe	Arg	Ser	Ser	Ile	Lys	Ala	Val	Thr	Ile	Arg	Lys	Val
	Ala	Val	Tyr	Pro	Gly	Asn	Val	Leu	Ala	Ile	His	Leu	Ser	Arg	Pro	Gln

# Sequence Listing

Asn Phe Lys Tyr Lys Ser Gly Gln Tyr Met Phe Val Asn Cys Ala Ala  
 580 585 590  
 Val Ser Pro Phe Glu Trp His Pro Phe Ser Ile Thr Ser Ala Pro Gln  
 595 600 605  
 Asp Asp Tyr Leu Ser Val His Ile Arg Val Leu Gly Asp Trp Thr Arg  
 610 615 620  
 Ala Leu Lys Gly Val Phe Ser Glu Val Cys Lys Pro Pro Pro Ala Gly  
 625 630 635 640  
 Val Ser Gly Leu Leu Arg Ala Asp Met Leu His Gly Ala Asn Asn Pro  
 645 650 655  
 Asp Phe Pro Lys Val Leu Ile Asp Gly Pro Tyr Gly Ala Pro Ala Gln  
 660 665 670  
 Asp Tyr Lys Lys Tyr Glu Val Val Leu Leu Val Gly Leu Gly Ile Gly  
 675 680 685  
 Ala Thr Pro Met Ile Ser Ile Val Lys Asp Ile Val Asn Asn Ile Lys  
 690 695 700  
 Ala Lys Glu Gln Ala Gln Leu Asn Arg Met Glu Asn Gly Thr Ser Glu  
 705 710 715 720  
 Pro Gln Arg Ser Lys Lys Glu Ser Phe Arg Thr Arg Arg Ala Tyr Phe  
 725 730 735  
 Tyr Trp Val Thr Arg Glu Gln Gly Ser Phe Asp Trp Phe Lys Asn Ile  
 740 745 750  
 Met Asn Glu Val Ala Glu Arg Asp Ala Asn Arg Val Ile Glu Met His  
 755 760 765  
 Asn Tyr Cys Thr Ser Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala Leu  
 770 775 780  
 Ile His Met Leu Gln Ser Leu Asn His Ala Lys Asn Gly Val Asp Ile  
 785 790 795 800  
 Val Ser Gly Thr Arg Val Met Ser His Phe Ala Lys Pro Asn Trp Arg  
 805 810 815  
 Asn Val Tyr Lys Arg Ile Ala Met Asp His Pro Asn Thr Lys Val Gly  
 820 825 830  
 Val Phe Tyr Cys Gly Ala Pro Ala Leu Thr Lys Glu Leu Arg His Leu  
 835 840 845  
 Ala Leu Asp Phe Thr His Lys Thr Ser Thr Arg Phe Ser Phe His Lys  
 850 855 860  
 Glu Asn Phe  
 865

<210> 21

<211> 2709

<212> DNA

<213> Arabidopsis thaliana

<220>

<221> CDS

<222> (1)..(2706)

<223> coding for NADPH oxidase

<400> 21

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Met Met Asn Arg Ser Glu Met Gln Lys Leu Gly Phe Glu His Val Arg	
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tac tac aca gag tcg ccg tac aac aga gga gag tcc tcg gcg aac gtg	96
Tyr Tyr Thr Glu Ser Pro Tyr Asn Arg Gly Glu Ser Ser Ala Asn Val	
20 25 30	
gcg acg aca agc aac tat tac ggt gaa gat gaa cca tac gtg gag atc	144
Ala Thr Thr Ser Asn Tyr Tyr Gly Glu Asp Glu Pro Tyr Val Glu Ile	
35 40 45	
acg cta gat atc cac gac gat tcc gtc tcc gtg tac ggc ttg aag tca	192
Thr Leu Asp Ile His Asp Asp Ser Val Ser Val Tyr Gly Leu Lys Ser	
50 55 60	
ccg aac cat cga ggg gcc ggg tct aat tat gag gat caa tcg ctt ctc	240
Pro Asn His Arg Gly Ala Gly Ser Asn Tyr Glu Asp Gln Ser Leu Leu	
65 70 75 80	

## Sequence Listing

aga	caa	ggt	cgt	tca	ggg	agg	agt	aac	tcg	gta	ttg	aaa	cgc	ttg	gct	288
Arg	Gln	Gly	Arg	Ser	Gly	Arg	Ser	Asn	Ser	Val	Leu	Lys	Arg	Leu	Ala	
				85					90					95		
tct	tct	gtt	tcc	acc	gga	ata	aca	cga	gtt	gct	tct	tct	gtt	tct	tcg	336
Ser	Ser	Val	Ser	Thr	Gly	Ile	Thr	Arg	Val	Ala	Ser	Ser	Val	Ser	Ser	
			100					105					110			
tct	tcc	gcg	aga	aaa	cca	ccg	cgg	ccg	cag	ctg	gct	aag	ctg	cgc	cgt	384
Ser	Ser	Ala	Arg	Lys	Pro	Pro	Arg	Pro	Gln	Leu	Ala	Lys	Leu	Arg	Arg	
		115					120					125				
tcg	aaa	tct	aga	gca	gag	cta	gct	ctc	aaa	ggt	ctt	aaa	ttc	atc	acc	432
Ser	Lys	Ser	Arg	Ala	Glu	Leu	Ala	Leu	Lys	Gly	Leu	Lys	Phe	Ile	Thr	
	130					135					140					
aag	act	gat	ggt	gtc	act	ggt	tgg	cct	gaa	gtt	gag	aaa	cgg	ttt	tat	480
Lys	Thr	Asp	Gly	Val	Thr	Gly	Trp	Pro	Glu	Val	Glu	Lys	Arg	Phe	Tyr	
145				150						155				160		
gtg	atg	aca	atg	act	aat	aac	gga	tta	tta	cac	cga	tcc	aga	ttc	ggt	528
Val	Met	Thr	Met	Thr	Asn	Asn	Gly	Leu	Leu	His	Arg	Ser	Arg	Phe	Gly	
				165				170						175		
gaa	tgt	ata	ggg	atg	aaa	tcg	acg	gag	ttt	gcg	ttg	gca	ttg	ttc	gat	576
Glu	Cys	Ile	Gly	Met	Lys	Ser	Thr	Glu	Phe	Ala	Leu	Ala	Leu	Phe	Asp	
			180					185				190				
gct	tta	gcg	agg	agg	gaa	aac	gta	agc	gga	gat	tca	ata	aac	atg	aat	624
Ala	Leu	Ala	Arg	Arg	Glu	Asn	Val	Ser	Gly	Asp	Ser	Ile	Asn	Met	Asn	
		195					200					205				
gag	ctt	aaa	gag	ttc	tgg	aag	cag	atc	act	gat	caa	gat	ttt	gat	tca	672
Glu	Leu	Lys	Glu	Phe	Trp	Lys	Gln	Ile	Thr	Asp	Gln	Asp	Phe	Asp	Ser	
	210					215					220					
agg	cta	cga	act	ttc	ttc	gcc	atg	gtc	gat	aag	gat	tcg	gat	ggg	cgg	720
Arg	Leu	Arg	Thr	Phe	Phe	Ala	Met	Val	Asp	Lys	Asp	Ser	Asp	Gly	Arg	
225				230						235				240		
ttg	aat	gaa	gcc	gaa	gta	aga	gag	att	ata	act	tta	agt	gct	tct	gca	768
Leu	Asn	Glu	Ala	Glu	Val	Arg	Glu	Ile	Ile	Thr	Leu	Ser	Ala	Ser	Ala	
			245					250					255			
aac	gag	ttg	gat	aac	att	cgg	aga	caa	gct	gat	gaa	tat	gct	gct	ttg	816
Asn	Glu	Leu	Asp	Asn	Ile	Arg	Arg	Gln	Ala	Asp	Glu	Tyr	Ala	Ala	Leu	
			260					265				270				
att	atg	gaa	gaa	ctc	gat	cct	tat	cat	tat	gga	tac	atc	atg	ata	gag	864
Ile	Met	Glu	Glu	Leu	Asp	Pro	Tyr	His	Tyr	Gly	Tyr	Ile	Met	Ile	Glu	
		275					280				285					
aat	ctc	gag	ata	ctt	cta	ttg	caa	gcg	ccg	atg	cag	gat	gtg	aga	gat	912
Asn	Leu	Glu	Ile	Leu	Leu	Leu	Gln	Ala	Pro	Met	Gln	Asp	Val	Arg	Asp	
	290					295					300					
gga	gag	agt	aag	aag	cta	agc	aag	atg	cta	agt	cag	aat	ctc	atg	gtt	960
Gly	Glu	Ser	Lys	Lys	Leu	Ser	Lys	Met	Leu	Ser	Gln	Asn	Leu	Met	Val	
305				310						315				320		
ccg	cag	agt	agg	aat	ctc	ggg	gca	cgt	ttt	tgc	aga	ggg	atg	aag	tat	1008
Pro	Gln	Ser	Arg	Asn	Leu	Gly	Ala	Arg	Phe	Cys	Arg	Gly	Met	Lys	Tyr	
				325					330				335			
ttt	ttg	ttt	gat	aat	tgg	aag	aga	gtg	tgg	gtg	atg	gct	cta	tgg	ata	1056
Phe	Leu	Phe	Asp	Asn	Trp	Lys	Arg	Val	Trp	Val	Met	Ala	Leu	Trp	Ile	
			340					345				350				
ggt	gct	atg	gcg	ggt	ttg	ttc	acg	tgg	aag	ttt	atg	gag	tat	cga	aaa	1104
Gly	Ala	Met	Ala	Gly	Leu	Phe	Thr	Trp	Lys	Phe	Met	Glu	Tyr	Arg	Lys	
		355					360				365					
aga	tcc	gct	tac	gaa	gtc	atg	gga	gtt	tgt	gtt	tgt	ata	gct	aaa	gga	1152
Arg	Ser	Ala	Tyr	Glu	Val	Met	Gly	Val	Cys	Val	Cys	Ile	Ala	Lys	Gly	
		370				375					380					
gct	gca	gag	acg	ctt	aaa	cta	aac	atg	gct	atg	att	ttg	tta	cca	gtt	1200
Ala	Ala	Glu	Thr	Leu	Lys	Leu	Asn	Met	Ala	Met	Ile	Leu	Leu	Pro	Val	
385				390					395					400		
tgt	agg	aac	acc	atc	act	tgg	ctg	cgg	acc	aaa	acc	aag	tta	agt	gct	1248
Cys	Arg	Asn	Thr	Ile	Thr	Trp	Leu	Arg	Thr	Lys	Thr	Lys	Leu	Ser	Ala	
				405					410					415		

# Sequence Listing

att gtt cct ttc gat gac agc ctc aat ttt cac aag gtc ata gct ata	1296
Ile Val Pro Phe 420 Asp Asp Ser Leu Asn Phe His Lys Val 430 Ile Ala Ile	
gga att tca gtt gga gtt gga atc cat gct aca tct cac tta gca tgt	1344
Gly Ile Ser Val Gly Val Gly Ile His Ala Thr Ser His Leu Ala Cys	
435 440 445	
gat ttc ccc cga ctg ata gct gca gac gaa gat cag tat gag cca atg	1392
Asp Phe 450 Pro Arg Leu Ile Ala 455 Asp Glu Asp 460 Tyr Glu Pro Met	
gag aag tat ttt ggg cca cag aca aag aga tat ttg gac ttt gtt caa	1440
Glu Lys Tyr Phe Gly Pro Gln Thr Lys Arg Tyr Leu Asp Phe Val Gln	
465 470 475 480	
tcg gta gaa gga gtt acc ggg att gga atg gtt gta cta atg acc ata	1488
Ser Val Glu Gly Val Thr Gly Ile Gly Met Val Val Leu Met Thr 495 Ile	
gcc ttt aca ttg gct aca aca tgg ttc aga cgt aat aag ctc aac ctt	1536
Ala Phe Thr Leu Ala Thr Thr Trp Phe 505 Arg Arg Asn Lys Leu Asn Leu	
500 510	
cct gga cca ctg aag aaa ata aca ggc ttc aat gcc ttc tgg tac tct	1584
Pro Gly Pro 515 Leu Lys Lys Ile Thr 520 Gly Phe Asn Ala Phe 525 Trp Tyr Ser	
cac cac tta ttt gtt atc gtc tac tcg ctt ctt gtc gtt cat gga ttc	1632
His His Leu Phe Val Ile Val Tyr Ser Leu Leu Val Val His Gly Phe	
530 535 540	
tac gta tac ctc atc atc gag cca tgg tac aag aaa acg aca tgg atg	1680
Tyr Val Tyr Leu Ile Ile 550 Glu Pro Trp Tyr Lys 555 Thr Thr Trp Met	
545 560	
tat ttg atg gta ccg gtg gtt ctt tac ttg tgt gaa agg ctg att cgt	1728
Tyr Leu Met Val Pro Val Val Leu Tyr Leu Cys Glu Arg Leu Ile Arg	
565 570 575	
gca ttc agg tca agc gtc gag gct gtt tca gtg cta aag gtt gct gtg	1776
Ala Phe Arg Ser 580 Ser Val Glu Ala Val 585 Ser Val Leu Lys 590 Val Ala Val	
tta cca ggg aat gtc ttg tcg ctt cac ttg tca aga cca agc aac ttc	1824
Leu Pro Gly Asn Val Leu Ser Leu His Leu Ser Arg Pro Ser Asn Phe	
595 600 605	
aga tac aag agt gga caa tac atg tat ctc aac tgt tct gca gtt tct	1872
Arg Tyr 610 Lys Ser Gly Gln Tyr Met Tyr Leu Asn Cys 620 Ser Ala Val Ser	
aca tta gaa tgg cat cca ttc tca att acc tca gct cca gga gat gac	1920
Thr Leu Glu Trp His Pro Phe Ser Ile Thr Ser Ala Pro Gly Asp Asp	
625 630 635 640	
tac ctc agt gtc cac atc agg gtt tta gga gac tgg act aag caa tta	1968
Tyr Leu Ser Val His 645 Arg Val Leu Gly Asp Trp Thr Lys Gln Leu	
650 655	
aga tca tta ttc tct gag gtg tgc aag cca cgc cct cct gat gaa cac	2016
Arg Ser Leu Phe Ser Glu Val Cys Lys Pro Arg Pro Pro Asp Glu His	
660 665	
aga ctg aac aga gcc gac tcg aag cac tgg gat tac atc cct gac ttt	2064
Arg Leu Asn Arg Ala Asp Ser Lys His Trp Asp Tyr Ile 685 Pro Asp Phe	
670 685	
cca aga atc cta att gat ggt cca tat gga gca cca gca caa gac tac	2112
Pro Arg Ile Leu Ile Asp Gly Pro Tyr Gly Ala Pro Ala Gln Asp Tyr	
690 695 700	
aag aag ttt gaa gtt gtt ctg cta gtg ggt cta gga atc ggt gcc act	2160
Lys Lys Phe Glu Val Val Leu Leu Val Gly Leu Gly Ile Gly Ala Thr	
705 710 715 720	
ccg atg atc agc ata gtg agt gac ata atc aat aac ttg aaa ggc gtg	2208
Pro Met Ile Ser Ile Val Ser Asp Ile Ile Asn Asn Leu Lys Gly Val	
725 730 735	
gaa gaa ggc agt aac cga aga cag tca ccg atc cat aat atg gtc aca	2256
Glu Glu Gly Ser 740 Asn Arg Arg Gln Ser 745 Pro Ile His Asn Met 750 Val Thr	



# Sequence Listing

cct	cct	gtt	tct	cca	tca	aga	aaa	agt	gag	acg	ttc	aga	acc	aag	aga	2304
Pro	Pro	Val	Ser	Pro	Ser	Arg	Lys	Ser	Glu	Thr	Phe	Arg	Thr	Lys	Arg	
		755					760					765				
gct	tac	ttc	tac	tgg	gtc	aca	aga	gag	cag	ggg	tcg	ttt	gac	tgg	ttc	2352
Ala	Tyr	Phe	Tyr	Trp	Val	Thr	Arg	Glu	Gln	Gly	Ser	Phe	Asp	Trp	Phe	
		770					775					780				
aag	aac	gtg	atg	gac	gaa	gtg	act	gaa	aca	gac	cgc	aaa	aac	gta	att	2400
Lys	Asn	Val	Met	Asp	Glu	Val	Thr	Glu	Thr	Asp	Arg	Lys	Asn	Val	Ile	
		785				790					795				800	
gag	ctg	cat	aat	tac	tgc	acc	agc	gtt	tac	gag	gaa	ggg	gac	gcg	agg	2448
Glu	Leu	His	Asn	Tyr	Cys	Thr	Ser	Val	Tyr	Glu	Glu	Gly	Asp	Ala	Arg	
				805					810					815		
tct	gca	ctt	atc	acg	atg	ctc	cag	tct	cta	aac	cat	gct	aag	cat	gga	2496
Ser	Ala	Leu	Ile	Thr	Met	Leu	Gln	Ser	Leu	Asn	His	Ala	Lys	His	Gly	
			820					825					830			
gtg	gac	gtt	gtg	tca	gga	aca	cgt	gtc	atg	tcc	cat	ttc	gct	agg	cca	2544
Val	Asp	Val	Val	Ser	Gly	Thr	Arg	Val	Met	Ser	His	Phe	Ala	Arg	Pro	
			835				840					845				
aac	tgg	aga	agc	gtt	ttc	aaa	agg	atc	gct	gtg	aat	cat	cct	aag	act	2592
Asn	Trp	Arg	Ser	Val	Phe	Lys	Arg	Ile	Ala	Val	Asn	His	Pro	Lys	Thr	
		850				855					860					
aga	gtc	gga	gtg	ttt	tat	tgt	gga	gca	gct	ggg	tta	gtg	aaa	gag	tta	2640
Arg	Val	Gly	Val	Phe	Tyr	Cys	Gly	Ala	Ala	Gly	Leu	Val	Lys	Glu	Leu	
					870					875					880	
cga	cac	tta	tca	ctg	gat	ttc	tct	cat	aag	acc	tcc	acc	aag	ttc	atc	2688
Arg	His	Leu	Ser	Leu	Asp	Phe	Ser	His	Lys	Thr	Ser	Thr	Lys	Phe	Ile	
				885					890					895		
ttc	cat	aaa	gag	aat	ttc	taa										2709
Phe	His	Lys	Glu	Asn	Phe											
			900													

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<211> 902

<212> PRT

<213> Arabidopsis thaliana

<400> 22

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			20					25					30			
Ala	Thr	Thr	Ser	Asn	Tyr	Tyr	Gly	Glu	Asp	Glu	Pro	Tyr	Val	Glu	Ile	
			35				40					45				
Thr	Leu	Asp	Ile	His	Asp	Asp	Ser	Val	Ser	Val	Tyr	Gly	Leu	Lys	Ser	
	50					55					60					
Pro	Asn	His	Arg	Gly	Ala	Gly	Ser	Asn	Tyr	Glu	Asp	Gln	Ser	Leu	Leu	
	65				70					75					80	
Arg	Gln	Gly	Arg	Ser	Gly	Arg	Ser	Asn	Ser	Val	Leu	Lys	Arg	Leu	Ala	
				85					90					95		
Ser	Ser	Val	Ser	Thr	Gly	Ile	Thr	Arg	Val	Ala	Ser	Ser	Val	Ser	Ser	
			100					105					110			
Ser	Ser	Ala	Arg	Lys	Pro	Pro	Arg	Pro	Gln	Leu	Ala	Lys	Leu	Arg	Arg	
		115					120					125				
Ser	Lys	Ser	Arg	Ala	Glu	Leu	Ala	Leu	Lys	Gly	Leu	Lys	Phe	Ile	Thr	
	130					135					140					
Lys	Thr	Asp	Gly	Val	Thr	Gly	Trp	Pro	Glu	Val	Glu	Lys	Arg	Phe	Tyr	
	145				150					155					160	
Val	Met	Thr	Met	Thr	Asn	Asn	Gly	Leu	Leu	His	Arg	Ser	Arg	Phe	Gly	
				165					170					175		
Glu	Cys	Ile	Gly	Met	Lys	Ser	Thr	Glu	Phe	Ala	Leu	Ala	Leu	Phe	Asp	
			180					185					190			
Ala	Leu	Ala	Arg	Arg	Glu	Asn	Val	Ser	Gly	Asp	Ser	Ile	Asn	Met	Asn	
		195					200					205				
Glu	Leu	Lys	Glu	Phe	Trp	Lys	Gln	Ile	Thr	Asp	Gln	Asp	Phe	Asp	Ser	
	210					215					220					

## Sequence Listing

Arg 225	Leu	Arg	Thr	Phe	Phe 230	Ala	Met	Val	Asp	Lys 235	Asp	Ser	Asp	Gly	Arg 240
Leu	Asn	Glu	Ala	Glu 245	Val	Arg	Glu	Ile	Ile 250	Thr	Leu	Ser	Ala	Ser 255	Ala
Asn	Glu	Leu	Asp 260	Asn	Ile	Arg	Arg	Gln 265	Ala	Asp	Glu	Tyr	Ala 270	Ala	Leu
Ile	Met	Glu 275	Glu	Leu	Asp	Pro	Tyr 280	His	Tyr	Gly	Tyr	Ile 285	Met	Ile	Glu
Asn	Leu 290	Glu	Ile	Leu	Leu	Leu 295	Gln	Ala	Pro	Met	Gln 300	Asp	Val	Arg	Asp
Gly 305	Glu	Ser	Lys	Lys	Leu 310	Ser	Lys	Met	Leu	Ser 315	Gln	Asn	Leu	Met	Val 320
Pro	Gln	Ser	Arg	Asn 325	Leu	Gly	Ala	Arg	Phe 330	Cys	Arg	Gly	Met	Lys 335	Tyr
Phe	Leu	Phe	Asp 340	Asn	Trp	Lys	Arg	Val 345	Trp	Val	Met	Ala	Leu 350	Trp	Ile
Gly	Ala	Met 355	Ala	Gly	Leu	Phe	Thr 360	Trp	Lys	Phe	Met	Glu 365	Tyr	Arg	Lys
Arg	Ser 370	Ala	Tyr	Glu	Val	Met 375	Gly	Val	Cys	Val	Cys 380	Ile	Ala	Lys	Gly
Ala 385	Ala	Glu	Thr	Leu	Lys 390	Leu	Asn	Met	Ala	Met 395	Ile	Leu	Leu	Pro	Val 400
Cys	Arg	Asn	Thr 405	Ile	Thr	Trp	Leu	Arg	Thr 410	Lys	Thr	Lys	Leu	Ser	Ala 415
Ile	Val	Pro	Phe 420	Asp	Asp	Ser	Leu	Asn 425	Phe	His	Lys	Val	Ile 430	Ala	Ile
Gly	Ile	Ser 435	Val	Gly	Val	Gly	Ile 440	His	Ala	Thr	Ser	His 445	Leu	Ala	Cys
Asp	Phe 450	Pro	Arg	Leu	Ile	Ala 455	Ala	Asp	Glu	Asp	Gln 460	Tyr	Glu	Pro	Met
Glu 465	Lys	Tyr	Phe	Gly	Pro 470	Gln	Thr	Lys	Arg	Tyr 475	Leu	Asp	Phe	Val	Gln 480
Ser	Val	Glu	Gly	Val 485	Thr	Gly	Ile	Gly	Met 490	Val	Val	Leu	Met	Thr 495	Ile
Ala	Phe	Thr	Leu 500	Ala	Thr	Thr	Trp	Phe 505	Arg	Arg	Asn	Lys	Leu 510	Asn	Leu
Pro	Gly	Pro 515	Leu	Lys	Lys	Ile	Thr 520	Gly	Phe	Asn	Ala	Phe 525	Trp	Tyr	Ser
His	His 530	Leu	Phe	Val	Ile	Val 535	Tyr	Ser	Leu	Leu	Val 540	Val	His	Gly	Phe
Tyr 545	Val	Tyr	Leu	Ile	Ile 550	Glu	Pro	Trp	Tyr	Lys 555	Lys	Thr	Thr	Trp	Met 560
Tyr	Leu	Met	Val	Pro 565	Val	Val	Leu	Tyr	Leu 570	Cys	Glu	Arg	Leu	Ile 575	Arg
Ala	Phe	Arg	Ser 580	Ser	Val	Glu	Ala	Val 585	Ser	Val	Leu	Lys	Val 590	Ala	Val
Leu	Pro	Gly 595	Asn	Val	Leu	Ser	Leu 600	His	Leu	Ser	Arg	Pro 605	Ser	Asn	Phe
Arg	Tyr 610	Lys	Ser	Gly	Gln	Tyr 615	Met	Tyr	Leu	Asn	Cys 620	Ser	Ala	Val	Ser
Thr 625	Leu	Glu	Trp	His	Pro 630	Phe	Ser	Ile	Thr	Ser 635	Ala	Pro	Gly	Asp	Asp 640
Tyr	Leu	Ser	Val	His 645	Ile	Arg	Val	Leu	Gly 650	Asp	Trp	Thr	Lys	Gln 655	Leu
Arg	Ser	Leu	Phe 660	Ser	Glu	Val	Cys	Lys 665	Pro	Arg	Pro	Pro	Asp 670	Glu	His
Arg	Leu	Asn 675	Arg	Ala	Asp	Ser	Lys 680	His	Trp	Asp	Tyr	Ile 685	Pro	Asp	Phe
Pro	Arg 690	Ile	Leu	Ile	Asp	Gly 695	Pro	Tyr	Gly	Ala	Pro 700	Ala	Gln	Asp	Tyr
Lys 705	Lys	Phe	Glu	Val	Val 710	Leu	Leu	Val	Gly	Leu 715	Gly	Ile	Gly	Ala	Thr 720
Pro	Met	Ile	Ser	Ile	Val	Ser	Asp	Ile	Ile	Asn	Asn	Leu	Lys	Gly	Val

# Sequence Listing

Glu	Glu	Gly	Ser	725	Asn	Arg	Arg	Gln	Ser	730	Pro	Ile	His	Asn	Met	735	Val	Thr
Pro	Pro	Val	Ser	740	Pro	Ser	Arg	Lys	Ser	745	Glu	Thr	Phe	Arg	Thr	Lys	Arg	
Ala	Tyr	Phe	Tyr	755	Trp	Val	Thr	Arg	Glu	760	Gln	Gly	Ser	Phe	Asp	Trp	Phe	
Lys	Asn	Val	Met	770	Asp	Glu	Val	Thr	Glu	775	Thr	Asp	Arg	Lys	Asn	Val	Ile	
785	Glu	Leu	His	805	Asn	Tyr	Cys	Thr	Ser	810	Val	Tyr	Glu	Glu	Gly	Asp	Ala	Arg
Ser	Ala	Leu	Ile	820	Thr	Met	Leu	Gln	Ser	825	Leu	Asn	His	Ala	Lys	His	Gly	
Val	Asp	Val	Val	835	Ser	Gly	Thr	Arg	Val	840	Met	Ser	His	Phe	Ala	Arg	Pro	
Asn	Trp	Arg	Ser	850	Val	Phe	Lys	Arg	Ile	855	Ala	Val	Asn	His	Pro	Lys	Thr	
Arg	Val	Gly	Val	865	Phe	Tyr	Cys	Gly	Ala	870	Ala	Gly	Leu	Val	Lys	Glu	Leu	
Arg	His	Leu	Ser	885	Leu	Asp	Phe	Ser	His	890	Lys	Thr	Ser	Thr	Lys	Phe	Ile	
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21